REDUPLICATION IN OLD CHINESE

by

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ABSTRACT

This dissertation aims at constructing a description of reduplication in Old Chinese, developing a generative theory of morpho-phonological interaction to account for the formation of the reduplication patterns, and re-examining general reduplication theories and issues of other linguistic components by drawing lessons from Old Chinese reduplication. The investigation of the source data reveals that Old Chinese reduplication has four basic patterns: progressive reduplication with either “smallness” or “vividness”, retrogressive pattern with “repetition”, fission reduplication with “specialization”, and total reduplication with a vivid impression (a parasitic sense).

The formation of the reduplication patterns results from the interaction between morphology and phonology. With motivation from semantics, the monosyllabic base is reduplicated as two identical syllables, which undergo further modification. 1) Since the reduplicative form with “diminutive” or “vividness” is semantically undecomposable, OOP (One Syllable One Meaning Principle) forces the two syllables to sound like one, which is achieved by raising the sonority of the onset of the second syllable. As such, the progressive pattern arises. 2) For the same reason, the reduplicative form with “specialization” has the same shape as the progressive at one stage. Pressure from the system thus compels it to undergo further modification, eventually producing the fission pattern. 3) The reduplicative form with a vivid impression is not under the control of OOP; thus it can keep its two identical syllables intact, yielding total reduplication pattern. 4) Reduplicative verbs are semantically decomposable; thus OOP does not come into effect. That the form is actually modified stems from the pressure of an already-existent total reduplication pattern, while this modification of the first rhyme is determined by quasi-iambic stress. This interaction produces a retrogressive pattern.

This study sheds light on reduplication processes in general and other linguistic issues. During reduplication, full reduplication occurs first; then the reduplicant is modified. That reduplication operates on the interface between morphology and phonology is a universal phenomenon, but how this operation proceeds is language-specific. The consistent distinction between Type A syllables and Type B syllables seen in Old Chinese reduplication patterns indicates the unreasonableness of reconstructing a “medial” yod for Old Chinese.
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CHAPTER ONE

Introduction

1.1 Aim and scope

This dissertation has three basic goals. The first is to provide a description of reduplication in Old Chinese (henceforth OC). The second goal is to develop a generative theory of morphology-phonology interaction to account for the formation of OC reduplication. The third goal is, with enlightening implications for OC as well as modern dialect reduplication, to evaluate and enrich general reduplication theories, and to re-examine issues involving other linguistic components.

In considering OC words with respect to their phonological shape, one prominent characteristic we may easily recognize is their basic monosyllabic structure. While it is possible to find words which consist of two syllables, many of them can be subdivided into two morphemic units. With this general observation of OC vocabulary in mind, it is a little surprising to find another sort of disyllabic word in which there is some kind of phonological relationship between the two component parts, but apparently no semantic relationship. The examples are shown as in (1) below.

1 Chao (1976b) develops an analysis of the Chinese word from the point of view of rhythm and structure. He says that for Chinese it is necessary to distinguish between two word conceptions: word-syllable and structural word. He also points out that we are not ready to call the Chinese zi ‘character’ (a monosyllable with a meaning) a word because of their important structural differences, but in OC these differences were at a minimum. Thus we can see that although what the term “word” means in Chinese is still at issue, there is no serious problem in the OC case.

2 According to Ma Zhen 馬真 (1980-81), more than one-sixth of Pre-Qin (before 221 BCE) Chinese vocabulary items are disyllabic words. Since multi-syllabic words are rare, we thus can infer that more than two-thirds of the vocabulary was consistently composed of monosyllabic words in Pre-Qin Chinese. We know that this did not change very much in the Han dynasty (206 BC-220 AD), and therefore we can conclude that monosyllabic words constitute the majority of the OC vocabulary.

3 The following four OC disyllabic words can be employed to demonstrate this point:
   a. xiānshēng 先生 ‘firstborn (Shijing); father and elder brother (Lunyu); teacher (Zhuangzi); my husband (Liu Xiang: Lienü zhuan)’ ← xiān 先 ‘earlier’ + shēng 生 ‘be born’
   b. sīhǎi 四海 ‘the whole country, the world (Mengzi)’ ← sì 四 ‘four’ + hǎi 海 ‘sea’
   c. xiǎngguó 相國 ‘premier (Xunzi)’ ← xiǎng 相 ‘to assist’ + guó 國 ‘state’
Ancient scholars were likewise interested in this special kind of disyllabic word. As early as one thousand years ago they had come to recognize them and tried to capture their phonological properties by creating such terms as diézi 副字 'duplicated character', shuāngshēng 雙聲 'paired-initial disyllabic compound', diéyùn 副韻 'paired-rhyme disyllabic compound', and liánmiánzi 連綿字 'sound-correlated disyllabic compound'. On this basis, modern scholars further point out that the majority of these disyllabic words are quite possibly derived from a reduplication process. Since reduplicative forms involving three or four syllables, as in modern dialects, are seldom found in OC, the discussion of OC reduplication refers almost exclusively to disyllabic forms as exemplified in (1) above. Previous treatments of this problem can be found in Kennedy (1955, 1959), Dobson (1959), Chou Fa-kao (1962), Norman (1988), Pulleyblank to appear, Bao 1995, Sun Jingtao (1996), and Baxter and Sagart (1998). However, since the phonology of OC is not well established and an adequate theoretical framework was lacking, OC reduplication has not been satisfactorily documented; nor has an overall analysis of the whole process been attempted. In order to fill this gap, the present study will provide an investigation of OC reduplication materials, thereby establishing reduplication patterns so as to show a clearer picture.

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4 liánmiánzi is not a term which can be strictly defined. In view of what is generally referred to by this term, we can roughly say that it includes the contents covered by the preceding three terms and other binoms which cannot be decomposed. (cf., Wang Guowei 1923, ZGDBKQS.25S)

5 For examples, Mandarin qīngchū 清楚 'clear' → qīngqīngchū 清清楚楚 'very clear', Chinese Fuzhou dialect kuoŋ31 捲 'roll up' → kiŋŋ31 luŋ32 kuoŋ31 今噜捲 ' (Zheng Yide 1983:36).
picture of what really occurs in this process. Chapter Two and Chapter Three are mainly dedicated to achieving this purpose.

This study is not merely a descriptive research of raw reduplication data in OC. It will also, it is hoped, have theoretical implications. Since generative grammar has been an active field in recent years and much literature has contributed to advancing theories of reduplication, I will therefore examine various theories and apply those applicable to this study. As demonstrated in many studies on many languages, a number of reduplication cases present a solid match or correspondence between a certain morphological meaning and a certain phonological pattern. However, why such a correspondence arises, or, more basically, why the phonological shape is necessarily changed in certain ways or left intact during reduplication is still a matter requiring further study. In Chapter Four, in view of the fact that almost all OC reduplication patterns have their own correlates in terms of morphological significance, which obviously results from the interaction between phonology and morphology, I shall develop a theoretical analysis demonstrating how the reduplication process is morphologically motivated and phonologically modified in accordance with certain universal or language-specific constraints.

Reduplication is of course not an isolated phenomenon; it is instead closely related to many other language components. Thus, implications drawn from OC reduplication will undoubtedly be quite helpful in thinking through some other linguistic issues. Considerations of this sort will be included in Chapter Five.

In summary, then, this dissertation aims at contributing both to the more specialized area of Chinese linguistics and to general linguistic theory.

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For instance, the intensive reduplication and perfect reduplication in Sanskrit operates with regard to different phonological patterns (e.g., Steriade 1988). In Mandarin, the correspondence between grammatical meaning of the reduplication and phonological pattern of reduplication can be generalized as follows (limited to monosyllabic words) (cf., Li and Thompson 1981; Zhu Dexi 1982):

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<th>implications</th>
<th>characteristic of the phonological pattern</th>
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<td>measure word</td>
<td>&quot;every&quot;</td>
<td>two syllables are usually not neutralized in respect to tone</td>
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<tr>
<td>adjective</td>
<td>&quot;vivid&quot;</td>
<td>the tone of the second syllable is changed to high level tone and the main vowel is retroflexed</td>
</tr>
<tr>
<td>volitional verb</td>
<td>&quot;a little bit&quot;</td>
<td>tone of the second syllable is neutralized</td>
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1.2 Phonology of Old Chinese

OC reduplication is generally considered a kind of morphological process. Nevertheless, since reduplication is concerned very much with sounds of words, it is therefore obligatory to have as clear an idea as possible about the phonological structure of OC in order to deal with it. On the other hand, as a historical study of language, it is necessary to get an understanding of the language stage that the study is designed to refer to.

1.2.1 What is Old Chinese?

To answer the question, “what is Old Chinese”, we need to periodize Chinese in general. As in other languages, Chinese language change is continuous, not abrupt. In accordance with this view it should be possible to arbitrarily divide the language into any periodization we choose. A more practical method, however, would be to periodize according to source materials such as the Shi Jing rhyme and the Qieyun 切韻. Other divisions are defined on political history. We know that the language named Chinese is too all-encompassing for a single language. In order to facilitate the periodization, the language in question is defined as the standard Chinese language, which, in terms of the phonological component, means an accepted norm for pronunciation among educated speakers in the country as a whole at any given time.7 With these criteria set up, we are able to propose an outline for Chinese periodization as in (2).8

(2) Periodization of Chinese

7 Pulleyblank (1984) believes that there is every reason to believe that the standard language, usually based on the dialect of the capital, has existed at least since the founding of the empire by Qin in 221 BC. I think that such a standard language possibly existed in Pre-Qin China, too. I can show two pieces of evidence. As explicitly stated in Mengzi, the dialect of the state of Chu is much different from that of the states of Qi and Lu. The sound system implied in Chuci written by Chu poets, however, is basically the same as that of the Shi Jing, written in central and northern China. Thus it can be seen that the Chu poets probably followed a standard language available at that time. Another piece of evidence is the occurrence of the term yāyán 雅言 ‘standard language’, as in Lunyu. The Western Han (206 BC-25 AD) scholar Kong Anguo 孔安國 interpreted yāyán as zhēngyán 正言 ‘standard language’ (quoted in He Yan’s 何晏 (?-249) Lunyu jijie). Yang Bojun (1958) translated yāyán as pǔtōnghuà 普通話 ‘common speech’ (putonghua is a formal term referring to the standard modern Chinese language).

8 How to periodize Chinese is still at issue. See, for examples, Norman 1988, Jiang Shaoyu 1996, Ting 1996.
I. Old Chinese (c. 1300 BC - 220 AD)
   i. Early Old Chinese (c.1300-771 BC; Later Shang dynasty-Western Zhou)
   ii. Classical Chinese (770-221 BC; The Spring and Autumn-Warring States))
   iii. Later Old Chinese (220 BC-220 AD: Qin-Eastern Han)

II. Middle Chinese (220-1279)
   i. Early Middle Chinese (the 3rd century- the 7th century; Wei and Jin - Early Tang)
   ii. Later Middle Chinese (the 8th century- the 10th century; Middle Tang-Southern Song)

III. Neo-Chinese (1279-date)
   i. Early Neo-Chinese (1279-1644; Yuan-Ming)
   ii. Modern Chinese (1644-now; Qing-now)

The history of Chinese has been roughly divided into three periods; seven further stages in more detailed divisions. Neo-Chinese includes two stages. For the establishment of Early Neo-Chinese, an important source exists in Menggu ziyun 蒙古字韻 (compiled between 1269 and 1292), a rhyme dictionary making use of the ṣags-pa alphabet, and the Zhongyuan yinyun 中原音韻 (1324) which was designed to be a guide for the rhyming of the form of poetry known as qū 曲 which was in use in the popular drama of the time. In the Qing dynasty (1644-1911), plenty of phonological works such as Wufang yuanyn 五方元音 (compiled between 1654 and 1664) and vernacular works such as Hongloumeng 紅樓夢 (finished in the middle of the 18th century) show great similarity in both phonology and grammar, in comparison with contemporary Mandarin.

Middle Chinese likewise includes two stages. The basic source for Early Middle Chinese is the Qieyun (601), a rhyme dictionary which represents a single and coherent form of the Chinese language, namely the elite standard common to educated speakers from both north and south in the period of division that came to an end with the Sui reconquest of the south in 589. Ultimately this standard went back to the dialect of Luoyang in the second and third centuries. Later Middle Chinese is represented in Yiqiejing yinyi 一切經音義 of Huilin慧琳 (737-820), Sino-Japanese known as Kan’on 漢音 ‘Chinese sound’, and rhyme tables such as the Yunjing 韻鏡 and Huangji

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9 This great similarity is attested in many aspects. For instance, rǔshēng syllables (checked syllables) were no longer existing in Zhongyuan Yinyun and the same holds true in contemporary Mandarin. It should be noted that rǔshēng syllables are still existing in modern dialects such as Yue (Cantonese), Min, Gan, and Wu dialects.
Old Chinese lasted for a long period approximately between 1300 BC and 220 AD. The earliest known examples of Old Chinese are found in the oracle-bone inscriptions which record divinations in the later Shang dynasty (c. 1300-1050 BC). In the following Western Zhou (c1050-771), there are inscriptions on bronze vessels recording royal donations and other such events. I tentatively call the language reflected in these two categories of archaeological texts and the transmitted texts of this period (see below) Early Old Chinese. The next stage is so-called Classical Chinese (770-221 BC). The classical period proper begins with Confucius 孔子 (551-479 BC) and continues to the unification and founding of the empire by Qin 秦 in 221 BC. It is in this period that the major philosophers’ works and also the first works of narrative history were written. Classical Chinese and Early Old Chinese are distinguished from each other in many aspects. There is a great deal of grammatical difference such as copulas, the pronoun system, final particles, and nominalization.

Although we are able to achieve a binary division for Pre-Qin Chinese on the basis of grammatical properties, it is difficult to follow such a division with respect to the phonological component. The basic reason is that only one major source of data is available for understanding the phonology of that time. During the Pre-Qin period, the most important phonological source was undoubtedly the *Shijing* 詩經 [Classic of poetry], a collection of 305 anonymous poems brought together in the sixth century BC\(^\text{10}\). The contents are compositions of different periods, the early and late pieces differing by as much as 500 years, but the poems of this collection in general display a consistent pattern of rhyming. Although the *Shijing* provides us with an integrated rhyme system for that time, the rhymes of the *Shijing* tell us nothing about initials; virtually the sole source of information on this subject is the phonetic compound characters

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\(^{10}\) The poems in *Shijing* have been recognized as rhyming (there are only a couple of poems which do not rhyme); thus the analysis of the rhymes used in the poems can provide information on OC phonology.
Thus the *Shijing* and *xiéshēng* are brought together to serve as one set of phonological data for defining the language during Pre-Qin times. We know, however, that the time when the *xiéshēng* phenomenon occurred was earlier than the *Shijing*. But there is still no way of establishing a phonological system based on the *xiéshēng* evidence alone, as opposed diachronically to the phonological system of the *Shijing*. With regard to rhyme, *xiéshēng* evidence is insufficient to offer a closed system comparable with the rhymes of the *Shijing*. As for the initials, assuming that we could establish a closed set of initials for the *xiéshēng* time (actually this is possible; see below), the problem is that we do not have sufficient evidence to establish an independent initial system applied exactly to the *Shijing* time. In other words, we do not know to what extent the initial system reflected in *xiéshēng* series had changed by the time of the *Shijing*. In any event, we can only get one set of phonological sources for Pre-Qin Chinese. We may divide Pre-Qin Chinese into two stages based on the syntactic component, but, at least at present, we cannot do that based on the phonological component of the language.

The last stage of Old Chinese is Later Old Chinese which lasted from 221 BC to 220 AD, the time between the Qin (221-206 BC) and Han dynasties (the Western Han (206 BC-25 AD) and the Eastern Han (25-225)). In this period, there are voluminous source materials which can be employed to distinguish the language with respect to all its components from other forms of the language, earlier or later. On the other hand, since the language in this period is more similar to

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11 *Xiéshēng* ‘harmonizing sound’, also called *xíngshēng* ‘form and sound’, refers to graphs that combine two simpler graphs, one representing the sound and one referring to meaning, for example, *jiāng* ‘river’ and *hé* ‘river’ – in each case the element on the left, derived from the pictogram for ‘water,’ is combined with another element which has nothing to do with meaning but stands for a word that was similar in sound to the particular word that was being written. *Xiéshēng* series refers to a series of graphs in which all members share an identical phonetic as in *hé* ‘river’, *hé* ‘carry’, *hē* ‘scold’, *kē* ‘permissible’, *kē* ‘harsh’, and *kē* ‘stalk’, in which each graph has the phonetic *kē*.

12 Another phonological source available for that period can be found in the *Chuci* [the Songs of Chu], a collection of poems which were mostly written by Qu Yuan (c. 340-278 BC) and his students. The sound system (limited in rhyme) implied in the *Chuci* is basically the same as that of the *Shijing*.

13 Since the time of the creation of the Chinese writing system, that is, the time of the occurrence of the *xiéshēng* phenomenon, is much closer to or overlaps with the time span of the early period of Old Chinese (see Qiu Xigui 1988: 22-28), it is possible to incorporate the rhyme information of the *Shijing* and initial information implied by the *xiéshēng* series together to reconstruct one phonological system.
Pre-Qin Chinese than Early Middle Chinese (Luo and Zhou 1958, Wang Li 1958), the language of this time thus should be incorporated into Old Chinese rather than Middle Chinese.

So far, Old Chinese has been defined as the language at its earliest period we are now able to access. The period starts in the thirteenth century BC and ends in 220 AD. The source data to be dealt with in this study is collected from this period of 1500 years. However, the phonological values that we can assign to these source data are generally based on just one phonological system, the Old Chinese phonological system. This arrangement appears to be problematic since the data from such a long period should not have phonological value assigned by just one phonological system. Actually, this is not as serious a problem as it seems, while at the same time this arrangement is the best we can do under the present circumstances. Firstly, the source data is mostly collected from Classical Chinese and Later Old Chinese sources; these two sub-periods cover around 1000 years. Second, though we basically use one phonological system it is still possible to do some modification in order to make the phonological values more suitable for certain source data. For the corpus from Classical Chinese there is no problem in directly applying the Old Chinese phonological system to it since this phonological system is mainly based on the evidence from this period. For the corpus from Later Old Chinese, we still apply the Old Chinese phonological system virtually unchanged. This application is acceptable since the phonological system of Later Old Chinese is similar to that of the Shijing on the one hand; and on the other hand, we can still modify the system with concrete evidence from the Later Old Chinese period whenever such evidence is available. Third, what is of most concern with respect to the phonological component of this study is the phonological pattern; thus in some cases even if there is some disparity regarding the exact phonetic values applied, the phonological pattern is still able to be maintained. Therefore, though it is not ideal to apply one and the same phonological system to a body of evidence covering such a long period, the drawbacks are not so great as to render the whole reconstruction useless for the present purpose.

14 It seems difficult to deal with the source data from so long a period as 1,500 years all at once. Actually the potential negative effect of this kind could be greatly reduced with respect to the following three facts or considerations. First, what is pursued in this study is the reduplication pattern or principle which runs through the whole period without radical change. Second, with support of evidence, I will also try to get periodization for the data involved, if only to some extent. Third, since there are generally no reduplication materials found in the early stage of OC, the period from which my source data are collected is not that long (1,500 years).

15 The Chinese script is not alphabetic. So the sound information of the source corpus represented by Chinese characters has to be interpreted in a complicated way, i.e., through phonological reconstruction (see below).
To sum up, from the point of view of historical linguistics we have made a definition for Old Chinese, from which the source data for the present study will be drawn. In particular, we will take the phonological system implied in the *Shijing* and xiéshēng series as representative of Old Chinese and all source data will be represented in terms of this phonological system. As for how we arrive at this phonological system, that will be discussed in the section immediately following.

1.2.2. Reconstruction of Old Chinese

1.2.2.1. The evidence for OC reconstruction

A desideratum for placing the study of OC reduplication on a more solid foundation is the need to achieve a better reconstruction of OC at the time of the *Shijing*. To reconstruct a phonological system of 2,500 years ago, we can not start with the phonology of that period; that is, we can not rush into working on the OC source data without first looking at later stages of the language. We have to start with present day Chinese and work backwards. The evidence we can find is multifold and it consists of the following aspects: (1) modern pronunciation; (2) traditional studies; (3) xiéshēng connections; (4) transcriptions and loan words; (5) Sino-Tibetan; (6) morphology. At this point, I shall give a brief discussion of these in turn.

A. Modern pronunciation

Modern Chinese pronunciation is important evidence for OC reconstruction. This is because modern Chinese, as the descendant of the language, is full of reflexes of the characteristics of the ancestral form of the language. More significantly, modern Chinese is composed of seven major dialects, each one being further divided into many sub-dialects. So many diverse living language forms provide us with a reliable guide to the understanding of OC phonology. Among all these dialects, the Min dialect seems to be the most important since as a dialect of people of the coast and mountains who have long been to some extent isolated from the political and cultural centre, it preserves the most OC features. For instance, in Middle Chinese and many other modern dialects hán 寒 ‘cold’, hú 糊 ‘paste’ and huái 懷 ‘hold in the bosom’ are pronounced as syllables with a fricative initial. But in the Min dialect their initials are all the stop k- (the pronunciation of the latter two words refers to the colloquial form of the dialect). Based on this, as well as
other evidence, we can reconstruct the OC initial *g- for that syllable. Then we can say that this *g- is preserved as a stop in Min dialect.¹⁶

B. Traditional phonological study

Traditional phonological study provides another very important source of evidence for OC reconstruction. This study includes rhyme dictionaries, rhyme tables, and Qing scholarship comparing the Shijing rhymes to the Qieyun.

Among ancient rhyme dictionaries, the Qieyun (601 AD) is undoubtedly the most important since it represents the codification of an elite standard pronunciation common to educated speakers from both north and south in the late Nanbeichao 南北朝 (420-589) period and it therefore could offer plenty of phonological information concerning Early Middle Chinese. In the dictionary word pronunciation was recorded by the way in which words were classified, first into the four tone classes, Level, Rising, Departing, and Entering, then within each tone category into rhymes, and finally within each rhyme into homophone groups for which the first character was given a fānqiè 反切 spelling, that is, its pronunciation was noted by two other characters, the first of which had the same initial sound and the second of which had the same final. Under this basic format, there was also a certain amount of deliberate arrangement of rhyme so that they were in corresponding order within each tonal category and so that rhyme groups that probably had merged in one or other of the two main dialect areas began with head words that had the same initial (see Pulleyblank 1984, 1998a). Thus we can see that although the Qieyun was not designed to record the word pronunciation in any kind of phonetic notation, it does offer a complete phonemic analysis in an implicit way; that is, every homophone group was given a fānqiè speller and the study of the fānqiè spellers will lead to the setting up of mutually exclusive sets which may be presumed to correspond to the initials and finals of the underlying language. Thus the Qieyun can offer us a good understanding of the phonological system of Early Middle Chinese. Relatively speaking, there was not a long time interval between the language of the Qieyun and OC; it is thus imaginable that the phonological system implied in the Qieyun will play a important role in OC reconstruction. To facilitate the using of the Qieyun as evidence for OC reconstruction, we must go to the reconstruction of the language of the Qieyun. Since Karlgren’s pioneering work (1915-26), some other scholars have made contributions to

¹⁶ It should be noted that the voiced obstruents have been systematically devoiced in Min dialect.
achieving a better reconstruction. Among them the work done by Pulleyblank (1984, 1991c) has perhaps come closest to achieving this (Boltz 1993:186). So we can treat his reconstruction (Early Middle Chinese; abbreviated as EMC henceforth) as representative of the Qieyun evidence in OC reconstruction (some features of EMC will be discussed below).

Another kind of traditional phonological material valuable for OC reconstruction is represented by rhyme tables (děngyùn tú 等韻圖), especially the earliest extant one, the Yunjing 韻鏡 (probably written in late Tang (618-907); the following discussion of this subject is mainly based on this book). In comparison with rhyme dictionaries, rhyme tables offer more linguistic information since they actually present a more sophisticated phonetic analysis of the sound system. These rhyme tables were originally designed as keys to the Qieyun by Buddhists. So in these tables the syllables of the Qieyun system are arranged on grids, the syllables in the same vertical grids most of the time sharing the same initial,²⁷ and the syllables in the same horizontal grids share the same final. Furthermore, rhyme tables such as the Yunjing 韻鏡 also present a detailed analysis of initials and finals. For initials, the analysis is carried on in terms of place of articulation ("seven sound divisions") and manner of articulation (quánqīng 全清 -- voiceless; cǐqīng 次清 -- voiceless aspirate; quánzhuō 全濁 -- voiced obstruents, etc.); for finals, the analysis in terms of "inner" (a relatively high vowel) and "outer" (a relatively low vowel); "closed" (the presence of w or u immediately next to the initial in a syllable) and "open" (absence of such segments); and Four Grades (referring to different properties of the main vowel or segment immediately before the main vowel). To achieve such an in-depth phonetic analysis, it seems impossible that the rhyme table authors simply depended on the categories of initials and finals found in the Qieyun. In other words, the authors must have taken the pronunciation of that time as the basis for completing the work. According to Pulleyblank (1970-71, 1984), there is every reason to hold the view that the pronunciation on which the Yunjing is based was the new standard pronunciation, that is, the pronunciation of the Tang capital in the Chang’ān area. Thus we can see that the Yunjing not only provides a good key to the phonological system of the Qieyun (the relationship between the language of the Qieyun language and that of the Yunjing language can be compared to that between uncle and nephew) but also provides a synchronic description of the standard pronunciation in mid- and late Tang. Obviously the phonological information represented in the Yunjing will be helpful in an OC reconstruction. At present the

⁻¹⁷ Due mainly to complementary distribution, different initials are sometimes placed in the same vertical grid.
only reconstructed phonological system carefully corresponding to the system of the *Yunjing* is in Pulleyblank (1984, 1991c), which he calls Later Middle Chinese (LMC henceforth).

For OC reconstruction, if we say that the evidence provided by the *Qieyun* and the *Yunjing* is indirect, then Qing scholars' successful work in classifying the rhyme groups of the *Shijing* and comparing these to the *Qieyun* rhymes should be treated as direct evidence since the agreed set of rhyming categories of the *Shijing* was established by them. With small refinements, they have remained the basis for OC reconstruction to the present day. This great achievement is the result of correct guideline concerning the historical development of language and proper method in rhyming analysis. During the late Ming dynasty, Chen Di 陈第 (1541-1617) first proposed a new view that it is a natural principle that the script and the sounds of language differ according to time and place.¹⁸ In using this principle, many outstanding Qing scholars subjected the rhyming system of the *Shijing* to rigorous testing. Their methodology was as follows. The words rhyming together in the *Shijing* were put into rhyme groups. All the words in the same rhyme group could potentially rhyme with each other. The words in a single *Qieyun* rhyme may distribute in different rhyme groups of the *Shijing*, and vice versa; furthermore, such a corresponding relationship is fixed. It took 200 years to finish the work of classifying and comparing. At the very beginning, Gu Yanwu 顾炎武 (1613-1682) divided the rhymes of the *Shijing* into ten rhyme groups, and Jiang Yong 江永 (1681-1762) divided them into thirteen groups. Later, Duan Yucai 段玉裁 (1735-1815) divided them into seventeen groups. After that, many other scholars such as Dai Zhen 戴震 (1723-1777), Wang Niansun 王念孙 (1744-1832), Kong Guangsen 孔广森 (1752-1786), and Jiang Yougao 江有诰 (1773-1851) continued to make up for deficiencies in earlier analyses. In Wang Niansun’s later years, he determined twenty-two rhyme groups for the *Shijing*.¹⁹ In rhyme classifications of this kind, yi阴 rhymes, whose EMC reflexes end in a vowel or glide, and ru入 rhymes, whose EMC reflexes end in a stop, are actually jumbled together since these two rhymes frequently rhyme with each other. If we split these two kinds of rhymes and meanwhile maintain the independence of the yang阳 rhymes, whose EMC reflexes

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¹⁸ The Chinese origin is 蓋時有古今，地有南北，字有更革，音有轉移，亦勢所必至。 (*Maoshi guym kao* 毛詩古音考 (1606)).

end in a nasal, then we totally get thirty-one rhyme groups for the rhyme system of the *Shijing.*

The rhyme groups of the *Shijing* are in (3) below.

(3) Rhyme groups of the *Shijing* (Luo Changpei and Zhou Zumo 1958: 11-12)

<table>
<thead>
<tr>
<th></th>
<th>(a) yín 陰</th>
<th>(b) yáng 陽</th>
<th>(c) rù 入</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>qín 侵</td>
<td>jī 吳</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>tán 談</td>
<td>hé 葉</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>wèi 微</td>
<td>zhūn 諄(文)</td>
<td>shù 術</td>
</tr>
<tr>
<td>IV(i)</td>
<td>ji 祭</td>
<td>yuán 元</td>
<td>yuè 月</td>
</tr>
<tr>
<td></td>
<td>gē 歌</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>zhī 脂</td>
<td>zhēn 真</td>
<td>zhi 質</td>
</tr>
<tr>
<td>VI</td>
<td>zhī 支(佳)</td>
<td>gēng 耕</td>
<td>xī 錫</td>
</tr>
<tr>
<td>VII</td>
<td>zhī 之</td>
<td>zhēng 蒸</td>
<td>zhi 職</td>
</tr>
<tr>
<td>VIII</td>
<td>yú 魚</td>
<td>yáng 陽</td>
<td>duò 鐘</td>
</tr>
<tr>
<td>IX</td>
<td>yōu 幽</td>
<td>dōng 冬(中)</td>
<td>duó(覺)</td>
</tr>
<tr>
<td>X</td>
<td>hòu 侯</td>
<td>dōng 東</td>
<td>wū 屋</td>
</tr>
<tr>
<td>XI</td>
<td>xiāo 宵</td>
<td></td>
<td>yào 藥</td>
</tr>
</tbody>
</table>

This rhyme classification provides us with a closed system of rhyme categories and also a definite relationship between the characters of a single rhyme group and the rhymes of the *Qieyun.* Only in making use of this wonderful achievement, mainly by Qing scholars, will our OC reconstruction be possible.

C. Xiéshēng connections

As mentioned above, xiéshēng refers to pictophonetic characters in which one element indicates meaning and the other element sound (called the “phonetic”). If a series of characters share the same phonetic, then, it can be inferred that all these characters have the identical or a similar pronunciation. This is the fundamental way in which the xiéshēng connections aid in the research of OC phonology. The first scholar to fully use xiéshēng connections in this field was

Note that this categorization reflects Wang Li’s (1937) proposal that the yín rhyme of group 14 in Wang Niansun’s system be split as two groups, zhī 脂 and wèi 微.
the Qing scholar Duan Yucai. Before Duan Yucai, the rhymes of the *Shijing* were the sole source for phonological research into the language of the *Shijing*. Nevertheless, the characters used as rhymes in the *Shijing* only amount to about 1870. As for the phonological status of the other ten thousand characters, there was simply no way to deal with it. On the other hand, more than 80 percent of the graphs recorded in the Han dynasty dictionary, *Shuowen*, are xiéshēng characters. It was Duan Yucai who first revealed the phonological significance implied in these characters. He said, ‘in the beginning, characters sharing the same phonetic must have belonged in the same rhyme group’. Using this principle, almost all characters from OC times were successfully classified in terms of rhyme groups.

The great value of xiéshēng connections is not limited to OC rhyme studies. Rather, it appears to be more valuable for the studies of OC initials, since the rhymes in the *Shijing* can help in the analysis of the finals but have nothing to do with the initials. Thus, xiéshēng connections become the main source for research on OC initials. The function of xiéshēng connections for the reconstruction of OC initials can be demonstrated through the following example. In EMC dān 銮 and zhān 戰 differ in respect to their initials: t- for the former and tə- for the latter. Nevertheless, since the two characters share the same phonetic dān 菓, it can be inferred that the two characters had the identical initial *t*- in OC.

**D. Transcription and loan words**

In ancient China, through contacts with people of other places, numerous foreign words were transcribed or loaned into Chinese and verse versa. Comparative research on this kind of data has also proved helpful in OC reconstruction. For instance, in the *Hanshu* by Ban Gu 班固 (32-92), the proper noun “Alexandria” was transcribed in Chinese characters as wū yì shān lǐ 烏弋山離 EMC ?o jìk ʂən lià. In making a comparison syllable by syllable, we may feel reasonably sure in reconstructing the OC pronunciations of these syllables. Wū 烏 EMC ?o should take the low vowel a as its main vowel because it corresponds to a in the first syllable of Alexandria. For the second syllable yì 兀 EMC jìk, since its correlative syllable has the liquid l as its initial, we then, could postulate an OC liquid initial *l*- for it. As a matter of fact, using this kind of data is quite a complicated process, but the stimulus which motivates us to try in this way is that this

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21 9353 distinct Chinese characters are analyzed in *Shuowen* by Xu Shen (58-148?). These characters are generally considered to be the total of characters extant at that time.
kind of evidence seems more precise and decisive, in comparison with some other kinds of
evidence such as xiéshēng connections.

E. Sino-Tibetan comparison and morphology

Since cognate languages certainly share many common characteristics, it is obvious that
Sino-Tibetan comparisons can provide us with plenty of evidence in reconstructing the OC
phonological system. The following case is quoted to illustrate this point.

At present, more and more scholars believe that there were two liquid initials *l- and *r- in
OC. Nevertheless, how to assign these two initials to the OC syllables is still controversial. Some
scholars (e.g., Li 1971) view the Middle Chinese initial l- as the unchanged lineal successor of
the OC initial *l- and believe that MC j- should be projected back to OC *r-, but others
(Pulleyblank 1962, 1991b; Schuessler 1974; Baxter 1992) oppose this view. Sino-Tibetan
comparison proves very helpful in resolving this problem. The comparison cases given in (4)
below are quoted from Jeon (1995). Note that Jeon uses Li Fang-kuei’s system and I add
Pulleyblank’s EMC after it.

(4) Some cognate words between Chinese and Tibetan

a. Chinese: li 出 OC *ljiar and ljiarH, EMC lia “depart, separate”
   Written Tibetan: ral-ba “be torn; cut (something) into small pieces”;
   ral “(of opinions) diverging”

b. Chinese: lù 盤 OC *lag, EMC lो “black”
   lù 塘 OC *lag, EMC lो “black solid soil”
   Written Tibetan: rog-po “black”

c. Chinese: yáng 揚 OC *raŋ, EMC jiaŋ “raise”
   Written Tibetan: laŋ-pa (laŋ is the stem) “raise”

d. Chinese: yòng 用 OC *raŋH, EMC juawŋh “use”
   Written Tibetan: lоŋs “use”

Using Li Fang-kuei’s OC reconstruction, the Sino-Tibetan comparison shows strange
correspondences between OC *l- and Written Tibetan r-, and between OC *r- and Written
Tibetan l-. On the basis of the cognate relationship between Tibetan and Chinese, it is better to
make the postulation opposite to Li Fang-kuei's *l- and *r-; that is, the MC l- should be traced back to the OC *r- and the MC j- to the OC *l-.\(^{22}\)

**F. Morphology**

Although the approach of taking morphological phenomena as evidence for OC reconstruction still remains in its incipient stages, it has already shown undeniable value for this purpose. The reason is that morphological processes usually present certain alternative patterns in which we are able to find fixed melodic materials or regulated phonological changes. Thus, the phonological information implied in the morphological processes are quite reliable and decisive.

1.2.2.2. Previous reconstructions of the OC phonological system

More or less by making use of the evidence illustrated above, scholars, originally in the west and soon afterwards in China and Japan, came to propose reconstructed phonological systems of OC in this century. I shall now briefly review some representative proposals, stressing the prominent features of the systems.

The first complete reconstruction of Old Chinese was produced in Karlgren (1940), theoretically accounted for in Karlgren (1954), and revised in Karlgren (1957). Karlgren applied the western linguistic approach to the large amount of source data already well sorted out by the traditional Chinese phonologists and his reconstruction turned out to be a dictionary which gives a phonological representation for a large body of the OC lexicon. Let us begin reviewing his reconstruction by showing his postulation of OC rhymes.

(5) Karlgren's reconstruction for the rhymes of OC

<table>
<thead>
<tr>
<th></th>
<th>(a) yīn 陰</th>
<th>(b) yáng 阳</th>
<th>(c) rù 入</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>qīn 侵 əm, ūm əm</td>
<td>jǐ 績 əp, ep</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>tán 談 əm, am, əm</td>
<td>hé 盖 əp, ap, əp</td>
<td></td>
</tr>
</tbody>
</table>

\(^{22}\) Not all MC j- should be traced back to OC *l- and j- is not the only reflex of OC *l- in MC. See the discussion in the next section and 2.1.3 below.
<table>
<thead>
<tr>
<th>III</th>
<th>wēi 微</th>
<th>ō, ed</th>
<th>zhǔn 聲</th>
<th>en</th>
<th>shù 衙</th>
<th>ō, et</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV(i)</td>
<td>ji 祭</td>
<td>â, ad, âd</td>
<td>yuán 元</td>
<td>ân, an, ån</td>
<td>yuè 月</td>
<td>â, at, åt</td>
</tr>
<tr>
<td></td>
<td>gē 歌</td>
<td>âr, ar, âr</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>å, a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>zhī 耻</td>
<td>ō, ed</td>
<td>zhēn 真</td>
<td>ēn, en</td>
<td>zhì 质</td>
<td>ē, et</td>
</tr>
<tr>
<td>VI</td>
<td>zhī 支</td>
<td>ēg, eg</td>
<td>gēng 耕</td>
<td>ēng, eng</td>
<td>xī 锡</td>
<td>ēk, ek</td>
</tr>
<tr>
<td>VII</td>
<td>zhī 之</td>
<td>ēg, eg</td>
<td>zhēng 蒸</td>
<td>ēng, eng</td>
<td>zhí 職</td>
<td>ēk, ek</td>
</tr>
<tr>
<td>VIII</td>
<td>yú 魚</td>
<td>âg, āg, ag</td>
<td>yáng 陽</td>
<td>âng, āng, ang</td>
<td>duō 鐘</td>
<td>âk, ak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o, å</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IX</td>
<td>yōu 幽</td>
<td>ō</td>
<td>dōng 冬</td>
<td>ōng</td>
<td>dú 毒</td>
<td>ōk</td>
</tr>
<tr>
<td>X</td>
<td>hōu 候</td>
<td>ūg, ūg</td>
<td>dōng 東</td>
<td>ūng</td>
<td>wū 屋</td>
<td>uk, ūk</td>
</tr>
<tr>
<td>XI</td>
<td>xiāo 宵</td>
<td>ōg, ōg</td>
<td></td>
<td></td>
<td>yào 藥</td>
<td>ōk</td>
</tr>
</tbody>
</table>

(6) Karlgren's reconstruction for the "medials"\(^{23}\) of OC

a. \(\text{-w-}\) is possibly assigned to syllables of all four grades;
b. \(\text{-i-}\) is assigned to the Grade III syllables;\(^{24}\)
c. \(\text{i}\) is assigned to Grade IV syllables.

(7) Karlgren's reconstruction for OC initials

\(^{23}\) Traditionally, the sound which occurs between the initial and main vowel is called a medial. Actually, this term indicates an incorrect understanding of the sound in this position since from a phonological point of view the so-called "medial" either goes along with the rhyme or goes along with the initial, but is not a segment independent from either rhyme or onset. (I shall discuss this issue more in Chapter Five below) Nevertheless, I sometimes use it just for the sake of convenience.

\(^{24}\) It should be noted that Karlgren's Grade III rhyme is not a correct conception since he has inappropriately mixed up some Grade II and Grade IV rhymes with Grade III rhyme. Since Karlgren's misunderstanding of Grade III is still influential in the study of Chinese phonology, I will avoid the term as far as possible. However in the case in which Grade III rhyme in *Yunjing* must be referred to, I will refer to it as True Grade III rhyme.
k k’ g g’ ng x (· = IPA ʔ)
t t’ d d’ n l s z ts ts’ dz dz’
ts $ t$s dz $ (the dot under the symbols stands for retroflex)

f f’ d d’ n ɪ (the diacritic mark above the symbols stands for palatalization)
p p’ (b?) m

Note: Besides these single initials, Karlgren also postulated some cluster initials such as *kl-, *gl-, and *ml-
on the basis of xiéshēng connections.

Karlgren’s OC reconstruction is full of creative ideas and approaches. Some of his principles and conclusions are still quite valuable and influential at present. However, as a pioneering work, it also contains imperfections. For instance, his system consists of as many as fourteen separate independent vowels, especially five back vowels distinguished in accordance with their different heights. There doesn’t seem to be any natural language that has such a vowel inventory.

In focusing on (5 Illa, IViia, VIlia, Xa), we can find that Karlgren has made subdivisions for these traditional rhyme groups. This subdivision itself may not be necessarily wrong. The problem is that the principle behind his subdivision is not consistently observed. It is found that Karlgren subdivided these rhyme groups because some of these syllables (finals) potentially rhyme or have xiéshēng connections with the syllables with voiceless stop (ru syllables). In (5 Vila, VIIa, IXa, XIa), some of the syllables likewise have such a potential, but Karlgen doesn’t make subdivisions for these rhyme groups. This treatment makes his OC reconstruction look unsystematic.

Another problem in Karlgren’s system is related to the yod. In his Ancient Chinese (Middle Chinese), Karlgren posits a front glide -j- in the so-called medial position of Grade III words (actually including some Grade II and Grade IV words). This is a basic mistake, since much evidence argues against the existence of a yod in so-called Grade III syllables (Pulleyblank 1962,)

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25 At first sight, it does not seem fair to criticize Karlgren’s vowel system from the phonemic point of view since he maintained that his system is not phonemic, but phonetic. However, the basic phonemic principle is universal and a reconstruction system should be able to stand the test of phoneme. In Karlgren’s system, we can find such rhymes as u̯g, ūg əg, og, and âg (=IPA u̯g, u̯g, og, and og) and these five different back vowels appear in front of the same velar stop ending. These five rhymes form a series of minimal pairs, but how can they stand in a natural language?
1970-71, 1984, 1992, 1994). Given this evidence, it is untenable to for him to project this *yod back to his Archaic Chinese (≈ OC) (see further discussion in 1.2.2.3 below).

Inspired by Karlgren's work, other scholars came to do their own reconstructions. Among the first were Tung T'ung-ho (1944) and Lu Zhiwei (1947). In comparison with Karlgren's system, the reconstructions of Dong and Lu present advantages in many respects. For example, they both recognized the chōngniū 重紐 phenomenon in the Qieyun and traced this phonetic distinction back to OC; thus their OC system looks more accurate. Nevertheless, some imperfections in Karlgren's system still remain unimproved in their reconstructions. One prominent flaw of this kind is their vowel system. In Dong's system, there are twenty separate vowels; in Lu's system, there are thirteen.

In the three reconstruction systems mentioned above, open syllables are quite rare or even nonexistent. Wang Li (1958) believed that a natural language should not have so few open syllables; consequently, he tried to make a symmetrical syllable inventory for OC by postulating open syllables for the yīn rhyme groups. However, some new, serious problems arise. Two obvious ones are illustrated here in following the arguments made in Pulleyblank (1962) and Ting (1975, 1976). In accordance with Wang Li's reconstruction system, finals such as *-a and *-ok, *-ø and *-øk, *-a and *-at must be able to rhyme or have xiéshēng connections respectively. But we are not sure if the identity of the main vowels is adequate to account for the use of the same phonetic in words with and without the voiceless stop ending. Another problem can be recognized from a systematic point of view. According to Wang Li's system, there is a rhyming relationship as well as a xiéshēng connection between -ø and -øk, between -a and -ai, and between -e and -ek. But, he simultaneously also postulates -øt, -øp, -ap, and -et which do not have such relation or connection with -ø, -a, and -e. A reconstruction of this kind gives rise to serious problems. That is, why does -ø go with -øk but not with -øt and -øp; why does -a go with -at but not with -ap; why does -e go with -ek but not with -et?

At the present time, the most widely-used OC reconstruction system is possibly Li Fang-kuei's (1971, 1980). Let us review the main body of his system in (7) below.

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26 Chǒngniū 重紐 refers to a phenomenon in which the so-called "Division III" rhymes in Qieyun contain words with the same initial in distinct homophone groups, one of which was placed in Grade III and one of which was placed in Grade IV in the Yunjing and later rhyme tables.
(8) Li Fang-kuei’s OC reconstruction

a. OC initials

\[
\begin{array}{cccc}
p & \text{ph} & b & m \\
t & \text{th} & d & n \\
ts & \text{tsh} & \text{dz} & s \\
k & \text{kh} & g & \eta \\
? & h \\
k^w & \text{kh}^w & g^w & \eta^w \\
?^w & h^w \\
\end{array}
\]

b. OC rhymes

<table>
<thead>
<tr>
<th></th>
<th>(a) yīn 隱</th>
<th>(b) yáng 陽</th>
<th>(c) rù 入</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>qīn 侵</td>
<td>əm</td>
<td>jī 緒</td>
</tr>
<tr>
<td>II</td>
<td>tán 談</td>
<td>am</td>
<td>hé 盤(葉)</td>
</tr>
<tr>
<td>III</td>
<td>wēi 微</td>
<td>əd, ər</td>
<td>zhūn 諄(文)</td>
</tr>
<tr>
<td>IV(i)</td>
<td>ji 祭</td>
<td>ad</td>
<td>yuán 元</td>
</tr>
<tr>
<td>(ii)</td>
<td>gé 歌</td>
<td>ar</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>zhí 脂</td>
<td>id</td>
<td>zhēn 真</td>
</tr>
<tr>
<td>VI</td>
<td>zhī 支(佳)</td>
<td>ig</td>
<td>gěng 耕</td>
</tr>
<tr>
<td>VII</td>
<td>zhī 之</td>
<td>əg</td>
<td>zhēng 蒸</td>
</tr>
<tr>
<td>VIII</td>
<td>yú 魚</td>
<td>ag</td>
<td>yáng 陽</td>
</tr>
<tr>
<td>IX</td>
<td>yōu 幽</td>
<td>əg^w</td>
<td>dòng 冬(中)</td>
</tr>
<tr>
<td>X</td>
<td>háo 侯</td>
<td>ug</td>
<td>dòng 東</td>
</tr>
<tr>
<td>XI</td>
<td>xiāo 宵</td>
<td>ag^w</td>
<td>yào 藥</td>
</tr>
</tbody>
</table>

c. Final consonants and four “tones”

Level tone  -m  -n  -ŋ  -ŋ^w  (-b)  -d  -g  -g^w  
Rising tone -mx  -nx  -ŋx  -ŋ^w x  (-bx)  -dx  -gx  -g^w x  
Departing tone -mh  -nh  -ŋh  -ŋ^w x  -bh  -dh  -gh  -g^w h  
Entering tone  ----  ----  ----  -p  -t  -k  -k^w
The single consonantal initials seen in (7a) amount to twenty-six. In addition, Li also reconstructs initial clusters with j, r, or l as a medial or with h or s as consonant prefix. The postulating initial clusters has a twofold purpose - to account for later developments and to explain why the initials of many words which have different places of articulation in Middle Chinese have xiéshēng connections.

Li posits a neat vowel system which just consists of four elements, that is, i, u, e, and a. In each of the rhyme groups, there is only one single vowel and consonant ending. The yīn 陰 groups usually have a voiced stop ending; the yáng 陽 groups have a nasal ending; the rù 入 groups consistently have a voiceless stop ending. We can see this situation in (7b) above. As far as the tone is concerned, Li believed that there were four tones, but these four tones and those of Middle Chinese are possibly quite different with respect to tone values and categorization of characters.

Generally speaking, Li’s reconstruction system presents a good example of a system which consistently and simply summarizes the relevant data and evidence now available. Nevertheless, some problems with this reconstruction produce appreciable impact on the reasonableness of the system. I shall show some cases to illustrate this point.

Li posits a simple vowel system of four elements, which satisfies the universality of the i-u-a vowel triangle. Nevertheless, this reconstruction is open to criticism from the point of view of typology. In terms of their distribution, we find that while his a and e appear before all classes of final consonants, i appears before dentals and vowels, and not before labials and labiovelars, while u appears only before velars. A vowel reconstruction with such a very uneven distribution does not seem to reflect a natural vowel system in a real language.

In order to account for the contacts of the yīn rhyme category through occasional rhyming or through the xiéshēng characters with corresponding yáng and rù categories, Li extended Karlgren’s proposal for a voiced stop, with the exception of one syllable which ends up with the liquid -r. It is hard to believe that a language could have only closed syllables, without syllables ever ending in a vowel or a glide.\(^{27}\) While we know that the syllables of old Mon consistently present a CVC syllable template, there is, however, a world of difference between Li’s system

\(^{27}\) We have never found a living language in which all syllables exclusively fall in a CVC template.
and Old Mon since the latter requires some kind of pharyngeal closure\textsuperscript{28} to syllables ending in vowels.\textsuperscript{29} Thus we should say that some of syllables in old Mon are of CVV\textsuperscript{30}.

The most recent OC reconstruction can be found in Baxter (1992). In working out his OC system, Baxter follows a number of previous proposals and made a further attempt to deal with such problems as pre-initials, initial clusters, main vowels, codas, and post-codas. Central to his hypothesis is the concept of a six-vowel system which can be traced back to Yakhontov (1960). We may understand this system by referring to his reconstruction of the OC rhymes, seen in (9) below.

(9) Baxter’s OC rhymes\textsuperscript{31}:

<table>
<thead>
<tr>
<th></th>
<th>(a) yǐn 陰</th>
<th>(b) yáng 陽</th>
<th>(c) rù 入</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>qǐn 侵</td>
<td>im, im, um</td>
<td>jǐ 纂</td>
</tr>
<tr>
<td>II</td>
<td>tán 談</td>
<td>cm, cm, om</td>
<td>hé 盖</td>
</tr>
<tr>
<td>III</td>
<td>wēi 微</td>
<td>ij, uj</td>
<td>zhūn 諮文</td>
</tr>
<tr>
<td>IV(i)</td>
<td>ji 祭</td>
<td></td>
<td>yuán 元</td>
</tr>
<tr>
<td>(ii)</td>
<td>gē 歌 (ej?), cj, oj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>zhī 脂</td>
<td>ij</td>
<td>zhēn 真</td>
</tr>
<tr>
<td>VI</td>
<td>zhī 支(佳) e</td>
<td>gēng 耕</td>
<td>eng</td>
</tr>
<tr>
<td>VII</td>
<td>zhī 之</td>
<td>i</td>
<td>zhēng 蒸</td>
</tr>
<tr>
<td>VIII</td>
<td>yú 魚</td>
<td>a</td>
<td>yáng 陽</td>
</tr>
</tbody>
</table>

\textsuperscript{28} Like the high vowels, palatal [i] and labiovelar [u], the pharyngeal vowel [a] also function on the margins of syllables as a glide, that is, an approximant with a lesser degree of stricture than a pharyngeal fricative such as [ɣ]. This pharyngeal approximant is probably referred as ə. The pharyngeal closure mentioned here refers to the occurrence of this segment. See Pulleyblank (1994b).

\textsuperscript{29} Cf., Pulleyblank (1992: 375).

\textsuperscript{30} Since a glide presents the feature element [-consonantal], the glide ə thus should be treated as a vowel, rather than a consonant. It should be noted that the difference between i and j, between u and w, and between a and ə is that the former are syllabic vowels while the latter are non-syllabic vowels.

\textsuperscript{31} This inventory of OC finals does not include the so-called post-codas, which are considered to be the origin of the Middle Chinese tones. The order of the rhymes has been rearranged in order to ease a comparison with others’ systems.
This inventory of OC finals shows that Baxter has split some traditional rhyme groups through assigning more than one head vowel to the same rhyme group. For example, the traditional rhyme group tán 談 (91b), for which most other scholars in the field reconstruct *-am, is split into three different kinds of rhymes, that is, *-em, *-am, and *-om. Basically speaking, this splitting hypothesis cannot hold water because it results in problems with respect to rhyming, xiéshēng connections, and morphological process. This point can be illustrated by showing several concrete examples.

Xián 閔 is a yuán 元 rhyme group word, which is commonly reconstructed as *-an. But Baxter gives two readings for it, that is, *gran and *fikren. Let us have a look at the rhyme sequences with xián 閔 seen in (10). The forms indicated by an asterisk are reconstructed by Baxter.

(10)  a. *Shijing* 127.3: yuán 原 wjan, xián 閔 *gran

b. *Shijing* 177.5: ān 安 *?an, xuān 軒 *xjan, xián 閔 *gran, yuán 原 *yuan, xiàn 憲 *xjans

c. *Shijing* 241.8: xián 閔 *gran, yán 言 *ngjan, lián 連 *C-rjan, ān 安 *?an

d. *Shijing* 305.6: shān 山 *shrjan, wán 丸 *wom, qiān 選 *tshjan, qián 虔 *grjan, chān 梆 *hlrjan, xián 閔 *gran, ān 安 *?an

e. *Shijing* 111.1: jiān 閐 *kren, xián 閔 *fikren

Obviously, the reason Baxter reconstructs these two forms for one character is that this character actually rhymes with two kinds of rhymes, i.e., *-an (10a-d) and *-en (10e), in terms of Baxter’s reconstruction. However, there is no evidence for assigning two readings to this character. In the relevant ancient commentaries, the Jingdian shiwen, and the Guangyun, xián 閔 only has one reading. Baxter may have taken into consideration the different semantic implications denoted by this word, but this is incorrect since it is hard to distinguish the xián 閔 (Baxter: *fikren) in the
Shijing 111 in meaning from xián 閔 (Baxter: *gran) in the Shijing 241. Besides, even if it were possible to successfully distinguish these two cases in terms of meaning, it still would not necessarily support Baxter’s hypothesis since different meanings of one word do not necessarily mean different pronunciations. In any event, we can be sure that xián 閔 has just one pronunciation. It cannot rhyme with both his *-an and *en. This case illustrates the problems with subdividing *-an, which is widely considered to be a proper reconstruction for the traditional yuan 元 rhyme group, into *-an and *-en.

The same holds true in the case of guān 管. Baxter reconstructs two forms *kon? and *kw an? for guān since guān is supposed to rhyme both his *-on? and *-an?. But guān has only one pronunciation. There is no reason to subdivide *-an into *-an and *-on. (cf., Baxter 1992:381)

Furthermore, Baxter’s six-vowel proposal also creates some problems in terms of OC morphology. As we know, *s- is a common suffix in the OC morphological system. But with Baxter’s subdivision reconstruction, it is hard to account for some cases in which the *s- suffix is involved. For instance, li 例 *rats > EMC liaj ‘example, instance’ is obviously a derivative of liè 列 *rät > EMC liat ‘row, arrange in a row’ by adding the suffix *s-. According to Baxter, liè 列 is *C-rjot while li 例 is *C-rjets. With this reconstruction, the quite simple morphological process, i.e., adding the suffix *s-, is blurred by their different main vowels, *-a- and *-e. There should not be a main vowel distinction with respect to liè 列 and li 例. This morphological case shows that it is not reasonable for him to divide *-a- into *-a- and *-e-.

1.2.2.3 The OC reconstruction system adopted in this study

This study is generally based on the OC reconstruction system presented in Pulleyblank (1962, 1963, 1977-78, 1991b, 1992, 1994c, and more recent ideas for reconstruction (personal

32 Xián 閔 in these two poems appears in an identical form xiánxíán 閔閔, a total reduplication word (which I shall discuss in Chapter Three below). Although some scholars give two different explanations for the two cases of xiánxíán 閔閔, some others consider the meaning in these two cases the same. In Shijing 111, Ma Ruichen 馬瑞辰 (1835) interprets xián 閔 as shú sāng shèng duō zhī mào 桑盛多之貌 ‘description of many mulberries’. In Shijing 241, Wang Yinzhi 王引之 (1797) interprets xián 閔 as wéi chē zhī qiáng shèng 車之強盛 ‘(it) refers to numerousness and strength of the chariots’. The common semantic implication in these two cases is “numerousness”. The difference between those in the two cases is due to the different contexts.
I shall sketch the main features of this system and meanwhile briefly show the reasons why OC should be reconstructed in such a way. Let us first have a look at his reconstruction of OC rhyme groups, as shown below.

(11) Pulleyblank’s OC rhymes:

<table>
<thead>
<tr>
<th>(a) yīn 陰</th>
<th>(b) yáng 阳</th>
<th>(c) rù 入</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>qīn 侵</td>
<td>jǐ 締</td>
</tr>
<tr>
<td>II</td>
<td>tán 談</td>
<td>hé 菜 (葉) ap</td>
</tr>
<tr>
<td>III</td>
<td>wěi 微</td>
<td>zhǔn 聰 (文) ən</td>
</tr>
<tr>
<td>IV(i)</td>
<td>jì 祭</td>
<td>yuán 元  an</td>
</tr>
<tr>
<td>(ii)</td>
<td>gē 歌</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>zhī 脂 əj</td>
<td>zhēn 真 əŋ</td>
</tr>
<tr>
<td>VI</td>
<td>zhī 支 (佳) aj</td>
<td>gēng 耕 əŋ</td>
</tr>
<tr>
<td>VII</td>
<td>zhī 之 əŋ</td>
<td>zhēng 蒸 əŋ</td>
</tr>
<tr>
<td>VIII</td>
<td>yú 魚 əŋ</td>
<td>yáng 陽 əŋ</td>
</tr>
<tr>
<td>IX</td>
<td>yǒu 幽 əw</td>
<td>dòng 冬 (中) əŋ</td>
</tr>
<tr>
<td>X</td>
<td>hòu 侯 at</td>
<td>dòng 東 əŋ</td>
</tr>
<tr>
<td>XI</td>
<td>xiāo 肖 aw</td>
<td></td>
</tr>
</tbody>
</table>

From this table, we can see that the OC vowel system is composed of just two contrasting elements, that is, ə and a. Though this has seemed counterintuitive and unnatural to most others working in the field, there are not only typological precedents in the Northwest Caucasian languages (Pulleyblank 1991b:45-46), but it also corresponds to a way of analyzing Mandarin phonology that has been familiar since Hartman (1944) and Hockett (1947, 1950). In closed syllables in Mandarin, only a single two-way rhyming contrast in terms of contrasting vowel height is possible before any given coda consonant [-ən, -in, -wən, -yn], rhyming together in contrast to [-an, -jen, -wan, -yan], etc. The high vowels [i, u, y] are, of course, found on the surface but they are underlyingly glides, rather than typical vowels.

This two-way vocalic distinction has actually been the underlying pattern in Chinese in all periods. This prominent property was even perceived by ancient scholars. In the early rhyme
tables such as the *Yunjing 韻鏡 (later Tang (618-907)) and the *Qiyinlue 七音略 (a. 1162),
which represents a stage of Middle Chinese, all syllables are distinguished as “inner” (nèi 内) and “outer” (wài 外). According to Luo Changpei (1933) and Pulleyblank (1984), the “inner” and “outer” opposition is actually in line with the height of the main vowels, which can be interpreted as the opposition between low vowels and non-low vowels. In his study of OC rhyme groups, Jiang Yong 江永 (1771 [1982]) successfully distinguished the yuan 元 rhyme group from the zhēn 真 rhyme group, the yè 葉 rhyme group from the jī 結 rhyme group, and the xiāo 宵 rhyme group from the yōu 幽 rhyme group. He achieved this due mainly to the recognition that in OC there are two basic types of sounds: one is a “wide” (chī 侈) sound (i.e., low vowel) and the other one is a “narrow” (yǎn 嘔) sound (i.e., non-low vowel).

Other evidence for this ə/a proposal comes from a morphological process, a kind of ‘ablaut’, in OC word families consisting of alternation between the vowels *ə and *a in pairs such as tān 談 EMC dəm < *dəm, ‘talk about (transitive)’, and tān 談 EMC dam < *dam, ‘talk (intransitive), conversation’ or sì 謂 EMC ɔi < *C-əɣ? ‘resemble’ and xiàng 象 EMC ʒianγ < *C-ɑɣ? ‘image, to imitate’. The morphological contrast extrovert/introvert between tān 談 and tān 談, sì 謔 and xiàng 象 is mainly represented by the vowel alternation ə/a. (See Pulleyblank 1989a)

The evidence and arguments briefly quoted above show that the ə/a proposal for the OC vowel system is quite reasonable. In line with this two-vowel system, Pulleyblank proposes that OC has more possibilities in terms of coda segments: there are not only the stops *-p, *-t, *-k (the rú 入 rhyme groups), and *-m (which Mandarin no longer has, but which still exist in southern dialects such as Cantonese), but also palatalized, labialized, and labiopalatalized velars, *-kʰ, *-ŋ, *-kʷ, *-ŋʷ, *-kʰʷ, *-ŋʰ, which, while not so widely recognized, can also be found among existing forms of Chinese. The present Fuzhou dialect has finals that are transcribed as -eiŋ, -ouŋ, -oŋŋ, that is, as diphthongs ending in -i, -u, and -y, followed by a velar nasal. The preceding glide in each case is in fact phonologically fused with the final velar nasal and should be regarded as a secondary articulation of the nasal rather than a separate segment.

33 In Beijing (1989a), there is a brief description about this phenomenon and it reads, 元音韻尾和輔音韻尾在部分韻母中可同時存在，如“桶” t’şiŋŋ, “克” k’ai? ‘vocalic ending and consonantal ending can be simultaneously existing in some of rhymes such as 桶 t’şiŋŋ ‘bucket’ and 克 k’ai? ‘gram’.
As far as the codas of the yǐn rhyme groups are concerned, apart from the reconstruction of *-s after stops, which accounts for many of the yǐn rhymes in the Middle Chinese departing tone, Pulleyblank reconstructs voiced continuants in various yǐn rhymes, including the glides *-j, *-w, *-t, and *-y\(^{34}\), and the liquid *-l. This series of reconstructions is highly acceptable because it is not only supported by Middle Chinese, modern dialects, and cognate languages, but also to its credit avoids the dilemma presented by both evidence of OC rhyming and xiéshēng patterns, and phonological typology. As implied in the above discussion, it is hard to postulate a satisfying coda for each yǐn rhyme group. The rhyming and xiéshēng connections between yǐn rhyme words and rù rhyme words lead us to postulate a similar segment for the yǐn rhyme groups. Conversely, if we follow Karlgren, Lu Zhiwei, Tung T'ung-ho, and Li who postulate the corresponding voiced stop ending for each yǐn rhyme group, we will run into problems from the point of view of typology since we will probably never find a language in the world in which all syllables end with either a nasal or a stop. We may try to reconstruct zero endings for some yǐn rhyme groups, just as Wang Li did, but then there is no adequate account for the rhyming and xiéshēng connections between yǐn rhyme words and rù rhyme words. Under these conditions, Pulleyblank’s reconstruction for OC yǐn rhyme groups seems to be a good proposal in resolving this apparently irreconcilable contradiction. From (11), we can get yǐn-rù rhyme codas in pairs such as *-j:*-k, *-y (u)::*-k, *-w:*-k, *-t:*-k. Since the two segments of each pair are homogeneous with respect to their place of articulation and/or method of articulation in some cases of rù rhyme though a secondary articulation, combined with their identical main vowel, it is relatively easy to account for the alternations between them with respect to rhyming and xiéshēng connection. More significantly, the yǐn rhyme codas *-j, *-w, *-t, and *-y (u), as seen in (11a), are not consonants; rather, they are actually nonsyllabic vowels corresponding to the syllabic vowels i, u, y, and w respectively. Thus, it can be seen that this OC system is not a system that only allows syllables with nasal or voiceless stop coda but it also allows syllables ending with a vowel.

Another important difference between Pulleyblank’s OC reconstruction and others’ is the replacement of Karlgren’s yod ɺ (IPA j) by A and B syllables defined by a prosodic contrast. While the yod which Karlgren reconstructed as characteristic of so-called Grade III rhymes has been shown to be a fundamental error in his system (Pulleyblank 1992), it defines a basic

\(^{34}\) *-y stands for a friction-less approximant rather than a fricative. It should be properly transcribed as -u.  

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contrast in syllable types: Type A (syllables without *yod* in Karlgren’s system) and Type B (syllables with *yod* in Karlgren’s system). The difference between the two types at the time of the *Qieyun* was that Type A syllables had a mid or low vowel while Type B syllables had one of the high vowels, *i, t, u*, either alone or followed by the vowel *a*. Since corresponding Type A and B syllables rhymed together in OC but not in EMC, the Type A/B split in Middle Chinese must have resulted from some contrast in the two types of syllables in OC. This contrast is assumed to be a prosodic contrast between a rising accent giving prominence to the second mora of the syllable (Type A; marked with the diacritic ‘ above the main vowel) and falling accent giving prominence to the first mora (Type B; marked with the diacritic ‘ above the main vowel). A possible parallel has been found in the Sizang (Siyin) Chin language of Burma (Pulleyblank 1994a).

In front of the main vowel *a* or *e*, there is possibly a segment (not initial), which is usually called a “medial”. Medial *-j-* is assigned to the OC syllables which give rise to Grade IV syllables or some of Grade II syllables in Middle Chinese. In the case of Type A syllables, medial *-j-* triggers raising or fronting of the main vowels *a* and *e*, thereby giving rise to *e* in EMC. The medial -j- in the case of Type B syllables is preserved in EMC.

Medial *-w-* may not be at first sight necessary, since most frequently medial -w- is distributed after labial, velar, or laryngeal initials in Middle Chinese and consequently its occurrence can be traced back to the built-in rounding feature of labials and the labial secondary articulation in the case of velars and laryngeals in OC. Nevertheless, it is found that the medial *-w-* was already fully-developed in the case of alveolar initials in OC only when followed by alveolar codas. Given this, it can be inferred that the rounding feature affiliated with velar and laryngeal initials had been already realized as a medial, rather than as a secondary articulation in OC. Thus Pulleyblank postulated a medial *-w-* after alveolar, velar, or laryngeal initials in OC, which generally corresponds to the EMC rounded medial.

In comparison with the OC rhyme reconstruction, the OC initial reconstruction has proved more difficult since the rhyme categories of ancient poetry offer a closed system, but there is no

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35 That is, it is wrong for Karlgren to reconstruct the *yod* -j- for Grade III syllables, but it is right for him to make a distinction between Grade III syllables and Grade I, II, and IV syllables.

36 Note that the EMC rounded medial has other OC origins. For instance, in some cases, the EMC rounded medial is possibly a derivative of rounding feature of codas in OC syllables. See Pulleyblank (1993).
evidence of this sort to establish a closed set for the OC initial. This awkward situation was changed with appearance of Pulleyblank (1991b), where it was shown that the twenty-two signs, known as tāngān 天干 ‘the ten Heavenly Stems’ and dizī 地支 ‘the twelve Earthly Branches’, can be interpreted as representing the twenty-two initial consonants: *k, kʰ, kʷ, k̄, t, p; x, x̄, xʷ, x̄́, s; ŋ, ŋ̄, ŋ, n, m; y, j, w, ʪ, ɻ. There are many pieces of evidence for this proposal. One of them is that, except for the velar fricatives, x, x̄, xʷ, x̄́, which had presumably already been lost as coda consonants by the time of the Shijing, these match exactly the consonants that are required to account for the final consonants of the Shijing rhymes according to the two-vowel hypothesis. The invention of these twenty-two phonograms was probably up to a millennium earlier than the Shijing. Therefore, based on Pulleyblank (1962, 1991b), as well as my own understanding, I shall use an OC initial system which is based on projecting back the phonetic values established for Middle Chinese, examining the evidence provided by jiājié 假借 37 and xiéshēng, interpreting the evidence in the light of hypotheses based on general linguistic theory, and checking them as far as possible with any additional evidence that can be drawn from modern dialects, cognate languages, Han dynasty transcriptions and early loan words. These OC initials and principal changes to EMC are given in (12) below.

(12) Initial consonants: from OC to EMC (conditions are noted in parentheses; A and B refer to Type A and B syllables respectively)

| Laryngeals | *ʔ > EMC ? (N.B., obligatory onset for vowels and j-) |
| Velars | *k kʰ g x ŋ > EMC k kʰ y x ŋ (A), k kʰ g x ŋ, sometimes palatalized to tζ tζʰ dz ζ (= n) when followed by j or a palatalized coda (B) |
| Labial velar | *w > EMC y w (A), w (B) |
| Dentals | *t tʰ d n > EMC t tʰ d n (A), tζ tζʰ dz ζ (= n) (B) |
| | *t tʰ d n > EMC tr trʰ dr nr (before r) |
| | *r > EMC l |

37 Jiājié 假借 ‘loan characters’ refers to a phenomenon where graphs that were originally devised to write one word are later borrowed to represent the sound of another, often totally unrelated word. For instance, the graph zǎo 足 originally was created to record the word meaning ‘flee’, but later was borrowed to record the word meaning ‘morning’ as in the Hanfeizi and the Shiji.
Besides single initial consonants, we also find initial clusters in OC, which are formed by the combination of single consonants with *-r-, *s-, and *a-. *-r- is recognized in those OC syllables which eventually became Grade II syllables and chóngniū Grade III in Middle Chinese. There is very strong evidence to support this postulation. Yakhontov (1960) points out the complementary distribution that is often found in xiéshēng series between words with l- in Grade I and words with velar or labial initials in Grade II. Pulleyblank (1962) comes to a similar conclusion; furthermore, he argues that the liquid in question should be *-r- since it was cognate to Tibeto-Burman *r rather than *l. The effects of medial *-r- are far-reaching; for the preceding initials, it produces the two series of retroflex initials found in EMC: *tr (cluster) > EMC tr (unisegmental afflictive) and *tsr > EMC ts; for the following rhyme, in the case of Grade II, the *-r- was metathesized with the main vowel, producing VV diphthongs æi and øi and eventually fusing to the long monophthong e: in LMC. This *-r- not only appears in the initial cluster which yields MC Grade II or chóngniū Grade III words, but also appears in other kinds of initial clusters which are postulated on the basis of xiéshēng connections.

Except for serving as an initial consonant alone, *s-, as a prefix, also can precede many other consonants, forming initial clusters. The *a- is a “voicing element”, cognate to Tibetan ha-chung, which was responsible for the voicing of initial obstruents in pairs such as jiàn 见 ‘see’ EMC kenb, xiàn 現 ‘appear’ EMC γenb. Combination with this pharyngeal approximant may be the real cause for the occurrence of many voiced obstruents. Nevertheless, since we may assume

\[ *\ddagger > \text{EMC } t^b (A), \varnothing (B) \]
\[ *l (< *\ddagger) > \text{EMC } d (A), j (B) \]
\[ *l (> *l) > \text{EMC } d (A), \varnothing \text{ or } dz (B) \]

Sibilants
\[ *ts ts^h dz s > \text{EMC ts ts^h dz s (A,B), ts ts^h dz s (before r)} \]
Labials
\[ *p p^h b m > \text{EMC p p^h b m} \]

38 This development and the previous one seem to present a case in which one OC *l- has given rise to two kinds of different MC reflexes unconditionally. This is actually not what I mean. According to the evidence from the cognate language and transcription in Han, there should be two kinds of laterals which were slightly different from one another in OC. The problem still at issue is the perceivable difference between these two kinds of */l/s.
that this process had probably almost finished at the time of the *Shijing*.

For some scholars in this field, tone is an inherent and unchanging feature which can be conventionally traced back to OC. This hypothesis was proved unreasonable in Haudricourt (1954). In view of the Vietnamese tonal system, its origin and the earliest layer of Chinese loanwords in Vietnamese, Haudricourt first proposed that the Chinese departing tone and its corresponding Vietnamese hœi-ngā (category C) tone had the same origin — they are both the result of the loss of an original h, which in turn derives from a still earlier s. Pulleyblank (1962, 1970-1971, 1978) strengthens this theory considerably by citing evidence for a final -s in early Chinese transcriptions of foreign words; furthermore, he suggests the possibility that the OC rising tone, like the corresponding sâc-nâng tones of Vietnamese, might have derived from a glottal stop. This new idea is also supported by modern dialect data and early transcriptions of Sanskrit words (Mei 1970). Thus, we can reconstruct the OC origins of the MC four tones as follows: the OC syllables which later gave rise to the level (ping) tone syllables are unmarked; the OC syllables giving rise to the syllables with the rising (shâng) and departing (qû) tones are marked with post-codas41 *-ʔ and *-s respectively; the OC syllables which correspond to the entering (rû) tone syllables in MC are distinguished by their voiceless stop endings.

So far I have briefly sketched the principal features of the OC reconstruction system which will be adopted in this study. The evidence and arguments I have adumbrated show that it is a reasonably reliable reconstruction system on the basis of which grammatical research could be carried out. Of course, many pieces of evidence have not been fully illustrated or have even been omitted. In the following discussion, I shall provide evidence for some given phonological properties of this reconstruction system when they potentially or actually cause controversy in OC reconstruction.

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39 There is no evidence for or against this assumption — it is only in Han dynasty when we have transcriptions that there is any evidence.

40 For instance, Talas (or: REDENTIAL) was transcribed as Dûlài 都 輯 (*táy râts > EMC to lâj) in *Hanshu*, and we can see that the Chinese departing tone (qûshéng) word lài 輯 corresponds to the original syllable with the coda -s : -las.

41 Post-coda refers to the segment that comes after the real coda of a syllable and yet does not contribute any weight to the syllable.
1.3 Previous study

1.3.1 Studies related to OC reduplication

The present study will deal with hundreds of OC binomial forms and illustrate how they derive from the morphological process of reduplication. Traditional Chinese scholars were also interested in more or less the same set of materials and did much work on them though they carried on their research from a different point of view. Let us start with a review of the studies of this kind.

In ancient texts there are numerous forms consisting of two identical characters such as jiū jiū 糾糾 *kjèw kjèw EMC kjiw kjiw ‘twisted’, shān shān 掙掙 *srón srón EMC ʂən/ʂə:m ‘slender, delicate’, and titi 提提 *dáj dáj EMC dej dej ‘tranquil, pliable’ (Shijing). In the living vernacular at various historical stages of the language, it can also be imagined and even some evidence given for the fact that there were many such forms which consisted of two identical sounds. This prominent sameness with respect to articulation, often represented by the same graph, made scholars pay attention to this set of words as early as two thousand years ago. In the Erya 素雅, the first Chinese dictionary compiled in the last years of the Warring States period (475 BC-221BC) (Hé 1985), there is a special chapter, named Shixun 释训 [lexical explanation], in which more than one hundred items of this kind are collected and semantically defined, e.g., míngmíng jīnjīn chá yè 明明、斤斤，察也 ‘both míngmíng and jīnjīn mean clear’. The same holds in another important dictionary, the Guangya 廣雅 by Zhang Yi 張揖 (fl. the Three Kingdoms (220-265)). Afterwards this kind of research continued uninterrupted down to the Tongya 通雅 by Fang Yizhi 方以智 (1579-1671), the Maoshi chóngyán 毛詩重言 by Wang Yun 王筠 (1784-1854), and the Dieya 堆雅 by Shi Menglan 史夢蘭 (1813-1898), where the term chóngyán 重言 ‘reduplicated word’ is found. This indicates that Chinese scholars had already recognized that these expressions derive from reduplication. However, since reduplication of this kind is apparently no more than a faithful copy of a syllable (base), without any phonological change, their attention, then, exclusively focused on the semantic relationship between the single form and the whole duplicated form. Outstanding among research of this sort

42 This kind of reduplication form actually expresses some kind of vivid impression, rather than an independent meaning which can be strictly defined. See the discussion in Chapter Three below.
was the *Erya zhengyi* 爰雅正義 by Shao Jinhan 邵晉涵 (1743-1796), the *Maoshi chōngyán* 毛詩重言 by Wang Yun 王筠 (1784-1854), Wang Xian 王顯 (1959), and Cao Xianzhuo 曹先擢 (1980). With regard to duplicated forms, the discoveries in these concerns can generally be summarized in two respects. First, the opinion that the reduplicative words of this kind usually have a common function of describing properties of things or actions was reached. that the single word and the whole duplicated word may or may not share common ground with respect to meaning was then found. These achievements reflect that the authors did much observation and categorization of chōngyán data, but were unable to have revealed the nature of the data; still at issue is what kind of morphological process is involved in production of these chōngyán words.

While interested in the data of chōngyán, ancient scholars were simultaneously interested in other kinds of binoms which apparently cannot be semantically decomposed into two parts, as exemplified in *xiāngyáng* 相羊 *sàn làn > EMC sànjian ‘pace up and down’, in which the component part xiāng itself means ‘look at’ and yáng means ‘sheep’. Binomial words like this fall roughly into a category named liánmiánzǐ 聯綿字 ‘connective characters’ in the *Fugubian* 復古編 by Zhang You 張有 (fl. between C.11 and C.12). Much research regarding liánmiánzǐ was conducted in ancient times and interest in the phenomenon has continued to the present. With their empirical experience, scholars have commonly understood liánmiánzǐ from two angles: first, there is normally not a semantic relationship between the two single syllables (words) and the whole binom; second, the two component parts of the binom are usually phonologically related to each other, and this relationship is sub-categorized as shuāngshēng 雙聲 ‘paired initial (a compound consisting of two syllables with the same initial consonant)’ and diéyùn 叠韻 ‘duplicated rhyme (a compound consisting of two syllables that rhyme with one another)’. In accordance with this definition, many examples of liánmiánzǐ were collected in the following works:

Wang Guowei 1923: “Liánmiánzǐ pǔ” 聯綿字譜 [A table of sound-correlated disyllabic words]. This work collects more than 2,000 disyllabic forms (including both liánmiánzǐ 聯綿字 and chōngyán 重言 ‘reduplicated characters’) from texts of Pre-Qing and the two Han dynasties.

Fu Dingyi 1943: *Liánmiánzǐ diǎn* 聯綿字典 [a dictionary of liánmiánzǐ].

Tu Ch’i-jung 1960: “Maoshi liánmiánzǐ pǔ” 毛詩 聯綿詞譜 [A table of sound-correlated disyllabic compounds in Maoshi]. In this work all 646 disyllabic forms in the *Shijing* receive phonetic notation in accordance with the OC reconstruction of Tung T’ung-ho (1944).
Yu Suisheng and Guo Li 1987: "Shuowen jiezi de fuyinci" [Disyllabic words in Shuowen Jiezi]. These two authors did a complete search for disyllabic words in the Shuowen, getting 1,690 items in total.

Chen Yan 1992: "Guangyun shuāngshēng diéyùn liánmiánzì de yǔyín yánjū" [A phonological study of sound-correlated disyllabic words defined by shuāngshēng or diéyùn]. This is a collection of such disyllabic words from the Guangyun, totaling 916 items, of which 548 were present in Old Chinese texts. Furthermore, the author looks into other issues related to OC or MC phonology based on the liánmiánzì data.

These works are not simple collections of data; all binoms have been further sorted in accordance with the authors’ understanding of OC phonology. These works are of course very valuable to further research, and it is mainly because of these data that I was able to get easy access to a huge number of binoms from a large body of ancient texts. Having said this, however, the achievement of these works cannot overcome serious problems existent in all of them. As mentioned above, liánmiánzì should not include binoms which can be semantically decomposed, but all these works actually cover many items that contradict this. For instance, pūfū 哀匍 *bāy bōk > EMC bo buwk ‘crawl’ is generally treated as a typical example of liánmiánzì, but it turns out to be a bad example since the second component part fū 伏 is actually an alternative writing of the word fū 伏 which means ‘lie prostrate’. Fū 伏 is obviously related in meaning to pūfū 哀匍; this fact indicates that pūfū 哀匍 is not an example in accordance with the definition that they set. On the other hand, while many scholars claim that the two components of all liánmiánzì must be related to one another through shuāngshēng or diéyùn, others such as in ZGDBKQS (p.258; see Abbreviation in the Bibliography) claim that liánmiánzì should also include one category where the two component parts do not have a relationship of either shuāngshēng or diéyùn. The serious controversies existing in canonical examples and central definition lead us to make a re-evaluation of the liánmiánzì and research on them. Quite simply, it is found to be very difficult to define liánmiánzì. Let us consider the phonological criteria first. If we make the stipulation that the two component parts of a liánmiánzì binom have a relationship of either shuāngshēng or diéyùn it looks good since it seems to be sound linguistic criteria. The application of these criteria, however, will get rid of many binoms which are

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43 Further discussion on this case will be given in Chapter Two below.
traditionally considered liánmiánzì. In order to keep this set of liánmiánzì, we may make a modification and say that it is not necessary for liánmiánzì to satisfy such phonological requirements. This modification works well but the new problem is that there will no longer be any phonological criteria by which we can define liánmiánzì. In focusing on the semantic relationship between the two component parts and the binom, a parallel problem can also be recognized. Moreover, assuming liánmiánzì reflects a linguistic pattern, it is expected that there must be some common grammatical or semantic significance running through all liánmiánzì binoms. Some scholars have unknowingly worked in this line and pointed out that the instances of liánmiánzì are similar to adjectives and have a descriptive function; but this is undoubtedly an over-generalization since many so-called liánmiánzì are nouns such as diāoliáo 飞鹅 *tjáw rjáw > EMC tew lèw ‘a kind of bird which eats worms inside of reeds’ and zhūyú 菊萸 *dáŋ láŋ > EMC dzúŋ juą ‘ailanthus prickly ash’, in which no descriptive function can be found. In any event, it is hopeless to try to establish a strict linguistic definition for liánmiánzì. Liánmiánzì reflects a typical traditional conception, which contains valuable insights but which cannot be treated in a strict linguistic manner. So, in researching the data which to some extent overlap with liánmiánzì, there is no reason to limit ourselves to the scope “defined” by liánmiánzì. In short, the previous traditional studies related to reduplication provide us with plenty of valuable materials but the framework is not worth following; it is necessary to start our investigation by taking advantage of data collected under liánmiánzì, but our investigation will certainly go beyond liánmiánzì.44

1.3.2 New studies of OC reduplication

Inspired by modern linguistic theories and reduplication research in other languages, scholars came to recognize the existence of many reduplicated forms in OC as early as the 1950s. In a seminar at Taiwan University in 1955, Tung T’ung-ho employed the term partial reduplication to cover liánmiánzì binoms whose component parts share the consonant initial or rhyme (see Chou Fa-kao 1962:97). Simultaneously, Kennedy (1955) planned to address such problems as reduplication, ‘ding-dong’ formations, and ‘pell-mell’ formations. It is clear that he wanted to

44 For example, the data dealt with in the first half part of Chapter Three below are basically not included in collections of liánmiánzì.
compare English reduplication with the OC case. His plan was partially implemented in Kennedy (1959). Dobson (1959) and Chou Fa-kao (1962) present comprehensive discussions of OC grammar in which a special chapter is arranged for the analysis of reduplication. In recent years, research of this kind has drawn more attention. In Norman (1988) and Pulleyblank (to appear), one can find precise and penetrating comments on OC reduplication. Both inspired by generative phonology, Bao (1995) tries to show the constraints on initial, medial, rhyme, and tone in OC reduplication, while Sun Jingtao (1996, 1998a) tries to establish patterns for OC reduplication. Also focusing on the establishment of reduplication patterns, Baxter and Sagart (1998) involve more precise phonological details. Now I shall present a review of some of these studies.

Kennedy (1955) deals with issues related to OC word formation such as whether hú 蝴 or dié 蝴 can stand by itself in the sense of ‘butterfly’ or not. Though his analysis of reduplication cannot be applied in the case of húdié 蝴蝶, he proposes that reduplication will play a role in the analysis of OC word formation. More study along these lines can be found in Kennedy (1959) where total reduplication forms (‘doublet expressions/forms’ in his term) such as fānfān 反反 ‘spiffy’ and fānfān 摘幡 ‘squiffy’ (Shijing) are discussed. Kennedy observed that these kinds of doublet forms are very common in the Shijing but that the characters used in doublets are generally most uncommon, so much so that 139 of the 360 characters used thus do not occur other than in doublet form. As for the characters which can stand by themselves, their meaning doesn’t match the meaning in the doublet. On the other hand, mainly based on the fact that there are numerous doublets meaning ‘sad’ (the single forms in each doublet either do not mean ‘sad’ or never stand by themselves), but the common word yōu 愫 itself is never reduplicated even though it independently occurs 82 times in the sense of ‘sad’ in the Shijing, it seems true that reduplicated words are always uncommon, and that common words are never reduplicated. Kennedy, then, comes to the conclusion that the doublets of this kind should be treated as primary forms rather than as derivatives and that they have nothing to do with reduplication. As for the formation of these doublets, he suggests the hypothesis that they may sometimes result from an attempt at onomatopoeia or punning.

Interestingly, he starts his work with a consideration of reduplication, but eventually concludes that what he is dealing with is not, in fact, reduplication. We must acknowledge that Kennedy reveals some truly important phenomena; in particular, he conducts his investigation from a linguistic point of view, rather than sticking to the graphic implications. Some problems,
however, deserve further discussion. First, though it is true that many common words such as 大, 小, 美, 近, and 遠 never occur in the doubles of the Shijing (or even in OC), we may still have to explain why some other common words such as 高 ‘tall, high’, 明 ‘blight’, and 青 ‘blue or green’ are reduplicated in the Shijing. Second, with regard to the definition of reduplication, Kennedy seems to have held to the premise that the base of a reduplicated form must be a free morpheme. However, if we do not take such a rigid definition as a starting point, and focus instead on the empirical experience with facts, it is reasonable to treat doublets not fitting the strict definition as reduplicated forms since their phonological properties (the two syllables are identical) and their semantic implications (descriptive function) are the same as those that adhere to the strict definition (those whose base is a free morpheme).

Predominantly based on the Shijing reduplication materials which were completely collected and preliminarily analyzed in Tu Ch’i-jung (1960), Chou Fa-kao (1962) made an extensive discussion of reduplication. According to the phonological relationship between the two component parts, he divides the reduplicated forms in the Shijing into two types -- complete reduplication and partial reduplication. Moreover, the latter is further sub-divided into shuāngshēng reduplication and diéyùn reduplication. The most valuable work in this study is probably his analysis of the distribution of reduplicated forms, both from a linguistic point of view and from a philological point of view. With regard to the complete reduplicated forms, Chou presents a detailed description of the distribution of these forms in the scope of the sentence. As for the partial reduplicated forms, after illustrating the statistics of their distribution in terms of sentence position, he points out that these reduplicated forms are usually used as modifiers, nouns, or exclamations. Although Chou’s study records some achievements, some other important issues are left untouched. Crucially, he does not make any endeavor to explain how the reduplication process works and in what kind of circumstances these phonological alternations possibly occur.

Bao (1995) was the first study of Classical Chinese reduplication using the theoretical framework of generative grammar. On the basis of a widely-held assumption, Bao treats all liánmiánzi words (which he calls p-words) as reduplicated words, which are further sub-divided into i-words (shuāngshēng) and r-words (diéyùn) in accordance with the syllabic position where the identical constituents are located. According to his understanding, the reduplicated data of this kind must be met with a different analysis because of their obscure etymological origins; that is, the uncertainty as to what the base of reduplication is requires a different analysis than
that usually used since the recognition of the base is indispensable in any other theory of reduplication. Bao therefore develops an analysis focusing on the relationship between the two syllables of a p-word in terms of the syllabic constituent by which they differ. The main analytical tool is the notion $P_{a}$, which takes the form of reverse engineering: as a product of the mechanism of OC partial reduplication, $P_{a}$ expresses the properties of a p-word, which in turn sheds light on the nature of partial reduplication, syllable structure, and the position of tone within the syllable. With this postulation, Bao looks into the property $P_{a}$ of these p-words, stressing the constraints between the tone and other segments including onset, medial glide, main vowel, and coda. The conclusion is that if the syllables of a p-word have one of the properties such as $P_{a}(C_{1})$, $P_{a}(G)$, and $P_{a}(V)$, they have same tone; if they have more than one of these kinds of properties, the tone is not predictable (they may, but need not, have the same tone). In addition, based on the implications arising from partial reduplication, he proposes that the syllabic position of the medial glide in Classical Chinese is indeterminate.

Generally speaking, Bao (1995) represents a good attempt at pursuing a general understanding of OC partial reduplication in formal terms. The approach he employs and its efficiency at extracting insights from one linguistic phenomenon are undoubtedly worthy of attention. Nevertheless, because of the difficulty of historical linguistics, problems seem inevitable. First, as mentioned above, the liánmíanzi words collected in many works are really a hodgepodge of many heterogeneous items. If we indiscriminately treat all liánmíanzi as reduplicated words, many non-reduplicated words will necessarily be included. For instance, Bao cites diàndào顛倒 ‘turn upside down’ as an example of a partially reduplicated word, but this obviously results from the juxtaposition of two synonyms. Second, the data quoted in his study come mostly from Classical Chinese, but Bao almost always applies the Middle Chinese reconstruction by Wang Li to them. This inappropriate approach has resulted in some serious consequences. As shown in many studies, the phonological systems of Classical Chinese and

45 Bao accepts the analysis of the Guangyun syllable which is maximally $C_{1}GVC_{2}$, where $C$ is a consonant, $G$ a glide, V a vowel.

46 The source is in Shijing 100: 東方未明，顛倒衣裳。顛之倒之，自公召之。‘The east is not yet bright; he turns his clothes upside down: he turns them upside down; from the court they summon him.’ (Karlgren 1950: 65) Diàn顛 and dào倒 can stand by themselves as in Lunyu 16: 危而不持，顛而不扶，則將焉用彼相矣？‘How can he be used as a guide to a blind man, who doesn’t support him when tottering, nor raise him up when fallen?’
Middle Chinese are to a great extent different, not only with respect to concrete phonological values, but also syllabic structure. Mixing these two periods is simply not permissible. Here is a typical example: to show different GVC₂ between the component syllables, Bao takes jiānjiā 百家 "reed" (Shijing) as an example, attaching it with Wang Li’s Middle Chinese reconstruction, kǐm T1 and kǎ T1. Let us observe the second syllable jiā 百, which is a Grade II syllable in Middle Chinese. According to Yakhontov (1960) and Pulleyblank (1962), syllables of this type should be projected back to syllables with a medial liquid in OC and this theory has been widely accepted as in Li (1971), Yu Naiyong (1985), and Baxter (1992). We thus see that the syllable structure of jiā 百 in OC contains a medial liquid, which did not occur in Middle Chinese. It is certainly impossible to come to a reliable conclusion if we mix up Middle Chinese and OC in this respect. Third, it has been commonly recognized that reduplication is a linguistic phenomenon involving two important components, phonology and morphology. Consequently, research on reduplication must deal simultaneously with these two aspects, rather than privileging one aspect and totally neglecting the other. Sometimes a single study will emphasize just one aspect temporarily without touching the other; but even so, it is still obligatory to get guidance or evaluation from the other aspect, otherwise the research will go astray. In Bao’s study, for instance, zhānzhuǎn 轉轉 ‘toss and turn’ and yǎoniǎo 騎駒 ‘(a kind of fast horse)’ are indiscriminately treated as reduplication items and both receive same kind of syllabic analysis. As will be discussed in Chapter Two below, the two reduplication words actually derive from different kinds of reduplication patterns; there is no point in comparing two such reduplication words with respect to their syllabic structure. More significantly, such distinct patterns are nicely matched with different morphological specifications. Without taking morphology into account, we can never get a clear understanding of the phonological properties implied in reduplication. Again, Classical Chinese reduplication is not a pure phonological phenomenon; we must try to find an appropriate approach for taking both aspects of the mechanism into account.

Baxter and Sagart (1998) present a discussion of word formation in OC in which one section is arranged to illustrate OC reduplication. Applying Baxter’s OC reconstruction, they argue for two reduplication types in which the two syllables are alike except for alternation in the main vowel as shown in (13) below.

(Legge) and Liji Qu: 倒奩階於君前，有誅。‘(Some one who) turns divination stalk upside down and incline turtle plastrons deserves punishment.’

39
Reduplication types (Baxter and Sagart (1998); some examples quoted)

a. *e/o alternation

刷促 qicù < tshjek-tshjowk < *tsHjek-tsHjok ‘busy’

辗转 zhānzhuān < trjenX-trjwenX < *trjen/-trjon/ ‘toss and turn’

靶琫 bìnghèng < pengX-puwngX < *peN/-poN/ ‘scabbard ornaments’

踟蹰 chíchú < drje-drju < *drje-drjo ‘pace back and forth’

计会 jih[kuái] < kejH-kwajH < *keps-kops ‘reckoning, accounting’

蜘蛛 zhīzhū < trje-trju < *trje-trjo ‘spider’

b. *i/u alternation

蟋蟀 xīshuài < s(r)it-srwit < *srjit-srjut ‘cricket’

厭浥 yīyi < ip/-ip < */rjip/-(r)jup ‘wet’

This careful observation reveals an important phenomenon which surely exists in the OC reduplication process. From a more general point of view, however, the two types illustrated here need a further generalization. As argued in Sun Jingtao (1996), a feature distinction, that is, [-round]/[ +round] is developed, for one kind of reduplication word. The evidence for such a feature distinction, rather than a segment distinction, will be given in Chapter Two below. From the examples of (13), we can find that the reduplicated forms are not consistent in their grammatical implications, varying from verb to noun. As we know, one reduplication pattern probably involves two word classes in terms of the surface form, but there must be some evidence to support such an asymmetry. Failure to show this kind of evidence leads to doubt about the reality of this pattern. In any event, the fact that the phonological alternation and grammatical implications are not matched in the treatment indicates that it has not been thoroughly analyzed.

The above review shows a clear picture of the status of OC reduplication research. Generally, research has been improving over the decades. The most significant achievement is that a huge number of phonologically-correlated compounds in OC have been recognized as derivatives of a reduplication process. By contrast, the biggest gap to be filled in this field is that OC reduplication has never received any extensive linguistic treatment in terms of both morphology and phonology. This study will attempt to fill this gap.
1.4 Theoretical framework

Reduplication is generally considered a morphological process by which a form or part of a form is repeated, thereby producing a form with different semantic or grammatical significance. This common understanding reflects the morphological and phonological components implicit in reduplication. We may, then, define reduplication as a mechanism which operates on the interface of phonology and morphology.

Several concepts regarding reduplication need to be briefly introduced. It is first necessary to understand what “base” and “reduplicant” mean. “Base” refers to the original form with which reduplication starts; while “reduplicant” refers to the part produced by the process. We can take “crisscross” as an example. In this word, “cross” is the base because it can stand alone and is related in meaning to “crisscross”; the first component part of the word, “criss”, is the reduplicant and it is no more than a derivative of the base form “cross”. In the case of one reduplication form consisting of two identical component parts, we can take either one as the base or the reduplicant. The Mandarin reduplication word, rénrén 入 入, can be treated as example, seen in the next paragraph.

Reduplication is possibly divided into total (or unmodified) reduplication and modified (or partial) reduplication. When the base form is repeated without any modification, it is called total reduplication. In standard Mandarin, rén 入 means person. The reduplicative form rénrén 入入 means ‘each person’. By contrast, modified reduplication involves phonological change. Again, we can take “crisscross” as example. The base form “cross” is changed to “criss” in the reduplication form, thereby producing a modified reduplication form “crisscross”.

Reduplication can also be understood in terms of directionality. Directionality of reduplication is determined by the relationship between the base and the reduplicant with respect to their mutual positions. When the base comes after the reduplicant, it is called retrogressive reduplication. “Crisscross” can serve as an example. Progressive reduplication is comprised of a base which precedes the reduplicant. We can find examples as in the Manam reduplicative form “moitaita” (‘knife’), in which the reduplicant ita follows the base moita (McCarthy and Prince
There are also some reduplication cases in which the directionality seems irrelevant. For instance, we can theoretically treat either syllable of a total reduplication form as the base; thus no directionality is involved.

It is understandable that any reduplicative form must have a base on which the process is carried out. The base, however, may not be easily recognized or understood due to uncertain origin, symbolism, onomatopoeia, etc. For instance, the formation of the word rè têngtêng 熱騰騰 ‘steaming hot’ in standard Mandarin must be related to reduplication since it consists of an adjective rè 熱 and two identical syllables. We may be sure by convention that têng teng is the base for the reduplication form têngtêng, but we may not be sure why such a form could serve as the base since têng teng is never independently used in a sense related to the meaning of the whole form. However, given the fact that all total reduplicative forms in such a position, i.e., preceded by an adjective, are consistently changed to high level tone (the first tone), we may assume that têng teng originally has its own tone. This is, in fact, the case: têng teng originally was in the second tone (têng teng) and it means ‘rise, soar’. This meaning is obviously to some extent related to the rising of steam. Thus, the reduplication based on this, following the adjective rè 熱 ‘hot’, is very suitable for expressing the meaning ‘steaming hot’. This example shows that we may not always expect to find an explicit base for a reduplicative form.

In the study of reduplication in general, much ink has been spilled regarding the crucial issue of how precisely this process of reduplication is accomplished. Among a number of proposals, which will be commented on in Chapter Five below, an analytic model presented in (Steriade 1988) is the most suitable for analyzing the OC reduplication. In accordance with this model, partial (or modified) reduplication is treated as reduction from full reduplication. The entire base morpheme is first copied, including all of its prosodic structure: [base] → [base+base]. The reduplicant then must be reduced in the appropriate way. In following this view, the construction of the reduplicated affix is not treated as mapping to a pre-existent template. Rather, the prosodic affix crystallizes as the left or right edge of the reduplicant through an appropriate modification. As for the case of total reduplication, I think it should also be treated in the same way though the modification eventually does not result in phonological changes. This model is

47 The terms “progressive reduplication” and “retrogressive reduplication” are carried on from Zhu Dexi (1982b). Progressive reduplication and retrogressive reduplication are called prefixing reduplication and suffixing reduplication respectively in McCarthy and Prince (1986, 1995a).
just a general framework. Crucially, how the modification works is still at issue. In the present study, however, I shall provide a case through which we can see how this modification is completed under the influence of both morphology and phonology.

For a morphological process, it doesn't seem surprising to find that reduplication is composed of morphology and phonology. However, reduplication has aroused a good deal of interest from phonologists and morphologists in recent years because of its characteristic properties which are distinguished from those of other morphophonological phenomena. From a semantic point of view, since reduplication is triggered by various morphological motivations, it appears to be able to represent meanings of every hue. This impression possibly stems from cases like (14) below.

(14) Various meanings of reduplicative verbs in some languages:
   a. mutual action (Naxi, a language of Tibeto-Burman: Ma et al. 1991:517)
   b. marking plural agreement (Nisgha: Shaw 1987)
   c. nominalization (Yoruba: Marantz 1982; Chinese Min dialect: Zheng Yide 1983)
   d. iterative or repetitive action (Vietnamese: Thompson 1965; Dakota: Shaw 1980)
   e. repeated inception (Mparntwe Arrernte: Evans 1995)
   f. tentative aspect (Mandarin: Chao 1968)
   g. progressive (Ilokano: McCarthy and Prince 1986)
   h. intensive (Classical Greek; Sanskrit: Steriade 1988)
   i. perfect aspect (Classical Greek; Sanskrit; Chinese Yongkang dialect: Yuan Jiahua et al. 1983:96)
   j. question (Yi, a language of Tibeto-Burman: Ma et al. 1991: 517)
   k. attenuative (Chinese; Vietnamese: Thompson 1965)
   l. distributive (Chinese; Vietnamese: Thompson 1965)

(14) is not a complete list, but even so, we can see how diversified the meanings signaled by the reduplicated verbs are. The same holds true in cases of reduplicative adjectives and nouns. Nevertheless, in an attempt to seek the common ground responsible for these different meanings, it is possible to extract out a semantic common element, say ‘repeating’, which is applicable to

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48 Téng 順 is a second tone word, but in reduplicative form it is conventionally changed to a first-tone word.
almost all the above examples.\(^49\) The existence of such a general characteristic among different languages, of course, is not a chance occurrence. Instead, it is possibly attributed to the constructional iconicity in terms of Cognitive Semantics (Lakoff 1988) or Natural Morphology (e.g., Mayerthaler 1981). According to principles of the theory, semantically more implies morphologically more; therefore, the meaning of repeating is supposed to be consistently represented by a reduplicative form. This empirical and theoretical experience tells us that reduplication cases in different languages can share the same kind of properties. It will thus be possible to draw lessons from tenable reduplication cases in living languages in order to help with the study of OC reduplication.

In consideration of the phonological characteristics of reduplication, if we recognize that the prototypical morphological operation is affixation to a base, it will be found that the affixation process of reduplication must exclusively take account of the phonology of the base, in that the process requires a precise knowledge of what material is copied and what kind of phonological change happens subsequently. Other morphological processes, like pluralization in English, certainly also involve some kind of phonological considerations, but they are incomparable with reduplication with respect to either complexity or extensiveness of distribution. In view of this general characteristic of reduplication, it can be imagined how complex OC reduplication will be, especially considering the current state of OC reduplication research.

In recent years, generative grammar has become an active field and much literature has contributed to advancing theories to account for many phonological phenomenon including reduplication in many languages. Because of this progress, I am able to conduct formal research within this theoretical framework. As we know, generative phonology pursues a precise formal analysis; thus, all relevant phonological details are required. Unfortunately, in the case of OC reduplication, we have to admit that some phonological details are still unclear. Such an uncertainty has a negative impact on the application of a rigorous theory. In view of this, a pragmatic approach will be attempted such that the theory will only be applied within the scope that the data can support. The following is an overview on such concepts or theoretical proposals regarding syllables and distinctive features that will underlie the concrete analysis of the phonological component of this study.

\(^{49}\) Some items involve secondary developments and therefore look like exceptions, as in (5f). See Zhang Min (1996).
The syllable is an essential concept for understanding phonological structure. Syllables can be taken as a natural domain in stating many phonological constraints and as a simple and insightful instrument to express phonological rules. The theoretical value of the syllable is all the more significant for OC since OC morphemes are basically monosyllabic and OC reduplication is almost exclusively referring to the repetition of one syllable.

Syllables may be composed of one segment (nucleus), but in general include more. The segments within a syllable are not flatly concatenated together; instead, they are constituted as a hierarchical structure. A typical CVC syllable is exemplified in (15)\(^{50}\).

\[(15)\]
\[
\text{syrllable} \\
\text{onset} \rightarrow \text{rhyme} \rightarrow \text{coda} \\
\text{nucleus} \\
C \rightarrow V \rightarrow C
\]

There are a number of complicated phonotactic constraints which apply to syllable constituents, some of them being cross-linguistic and some others being language-particular. One constraint which operates to varying degrees in all languages is the Sonority Sequencing Principle (see, for example, Kenstowicz 1994) that requires the onset to rise in sonority toward the nucleus and codas to fall in sonority from the nucleus.\(^{51}\)

Syllables can be weighed in terms of mora. The mora is a unit of measurement by which syllable weight is measured. That is, a vowel dominated by two moras is realized as a long vowel; a consonant dominated by two moras is realized as a geminate (Perlmutter 1995). It is found that in many languages syllables with two moras are weighed as a heavy syllable and a

\(^{50}\) This syllable-internal analysis can be traced back to traditional Chinese scholars’ works such as rhyme tables (dēngyǔntú 等韻圖) in Tang dynasty (618-907) and Song dynasty (960-1279). The detailed discussion can be found in Chao (1941), Karlgren (1954), Fudge (1969), Selkirk (1982), Blevins (1995).

\(^{51}\) Since sonority plateau is allowed in some languages, Sonority Sequencing Principle has been revised as Sonority Sequencing Generalization which says that between any member of a syllable and the syllable peak, a sonority rise or plateau must occur. Another possible explanation, with regard to the exceptions to the principle, is to view the sonority system within a syllable as a hierarchically-ranked family of violable constraints.
syllable with one mora is weighed as a light syllable. All OC syllables, which denote the content meaning, are consistently heavy syllables.

Distinctive features refer to any feature which distinguishes one linguistic unit from another. This term is common in phonology, where distinctive features cross-classify the entire inventory of possible speech sounds into a densely packed network. The distinctive features are identical for all languages, and languages differ only in the way in which they combine these features into phonemes. In general, each feature plays a role by presenting its plus or minus value. In diachronic or synchronic phonological processes, a phonemic or allophonic change is actually often a reflex of a plus/minus alternation with respect to feature value. Thus, the establishment of the idea of distinctive features has turned out to be helpful in gaining a deeper understanding of phonology.\(^{52}\)

A good deal of work has gone into demonstrating that a feature has its own characteristic articulatory and acoustic correlates and that a set of distinctive features can be combined together to define a phonological segment. But this does not mean that the notion of “segment” corresponds in a simple fashion with discrete sets of binary feature specifications. Actually, what we find is that phonological processes often operate on consistent subsets of the distinctive features within a segment, and one or more features may characterize a whole set of segments. In order to formally capture the underlying nature of feature behavior in agreement with the leading idea that features should be organized around the articulator (the movable parts of the vocal tract), scholars have proposed a hierarchical organization of the features into functionally related classes grouped under nodes of a tree structure (Clements 1985, Halle 1995, among others). There are various competing proposals for the nature of the organization and many details remain to be worked out. For reference, figure (16) provides one example of a tree structure outlining the organization of phonological features (see McCarthy 1988, Aechangeli and Pulleyblank 1989):

\(^{52}\) For distinctive feature, see, for example, Kenstowicz (1994).
Since the features are phonetically and phonologically defined in a hierarchical network which effectively constrains the range of natural phonological rules and constraints, it is plausible to account in a formal way for many phonological processes such as reduplication.
CHAPTER TWO

Directional Reduplication

2.0 Introduction

This chapter and the following (on Non-directional Reduplication) are designed to present an overall description of OC reduplication. The work will be carried out through an investigation of various source materials, the establishment of reduplication patterns, and a comparison of the OC reduplication patterns with those of modern Chinese dialects and other languages. As mentioned in Chapter One, the work of previous scholars, such as Wang Guowei (1923), Tu Ch’i-jung (1960), Yu and Guo (1987), and Chen Yan (1992), as well as the corpus of material which I have collected from primary sources, have collectively contributed a tremendous amount of data related to OC reduplication. On the basis of the analysis of these source materials, reduplication patterns will be established by satisfying two kinds of requirements -- first, there is the phonological requirement: all reduplicative words must be grouped in accordance with a possible pattern and present a consistent phonological alternation between base and reduplicant (certain kinds of deviation are allowed as long as they can be theoretically accounted for); second, there is the morphological requirement: the meaning produced by this process must be shared by these reduplicative words. Of course, these two requirements are not some arbitrary stipulation; on the contrary, they are actually generalizations of the nature of reduplication. As will be shown in the coming discussion, it turns out to be true that most reduplication patterns attested in living languages do satisfy these two requirements. Thus, incorporating source data into reduplication patterns by examining their satisfaction of the two requirements will be proved a proper way. My effort to establish OC reduplication patterns, then, will be in line with this methodological consideration.

As has been discussed in Chapter One, the language named OC is actually a linguistic continuum presenting many disparate historical stages and geographical variants. In view of this situation, even at the outset we may predict that the reduplication encountered during this investigation will be marked by diversity. Moreover, by virtue of the fact that this study deals

1 Since total reduplication, also called unmodified reduplication, consistently keeps the two parts of a reduplicative form intact, it should be considered a case in which the requirement of phonological zero-alternation is satisfied.
with OC reduplication as a natural morphological process in real language, it is not supposed to be something characterized by regularity. There should be some dominant patterns in OC reduplication which might have been active in vast areas for quite a long time. Under this spatio-temporal condition, discussion will focus on the dominant patterns. Simultaneously, however, I shall incorporate the discussion of minor reduplication patterns into this chapter, as well. Finally, some sporadic instances which are still beyond my understanding at this point will also receive some treatment in the course of my analysis.

This chapter is composed of two major sections. Firstly, there is the progressive reduplication pattern (in which the base comes in front of the reduplicant) and next the retrogressive reduplication pattern (in which the base comes after the reduplicant). Each of these sections will be further sub-divided in a manner that is possibly in keeping with morphological implications. Such an arrangement reflects a view that reduplication presents a close relationship between phonological alternation and morphological significance.

2.1 Progressive pattern

2.1.1. Diminutive reduplication

Diminutive refers to the form of a word which is usually constructed through the addition of a suffix connoting the meaning ‘little’ or ‘small’, e.g., pig > piglet, arm > armlet, and duck > duckling in English, and yú 魚 ‘fish’ > yúr 魚儿 ‘small fish’, qiú 球 ‘ball’ > qiúr 球儿 ‘small ball’, and tū 土 ‘soil’ > tür 土儿 ‘dust’ in Chinese. Nevertheless, the diminutive sense is not solely expressed through the diminutive suffixation — it can also be signaled by linguistic mechanisms like reduplication. Reduplication is designed to express a variety of different meanings; the kind which signals diminutive appearance is called diminutive reduplication. Let us first review some attested cases that are manifested in modern languages, as shown in (1).

(1) a. Chinese Fuzhou dialect (Liang Yuzhang1983):

<table>
<thead>
<tr>
<th>English</th>
<th>Chinese</th>
<th>Pinyin</th>
</tr>
</thead>
<tbody>
<tr>
<td>bucket</td>
<td>t'øyŋ31 桶</td>
<td>t'øyŋ31 t'øyŋ31桶桶</td>
</tr>
<tr>
<td>bag</td>
<td>pau4 包</td>
<td>pau31pau44 包包</td>
</tr>
<tr>
<td>big</td>
<td>tuai242 大</td>
<td>tuai11 tuai242 大大</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘small bucket’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘small bag’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘the first child’</td>
</tr>
</tbody>
</table>
b. Pingyao dialect (a Mandarin dialect; Hou Jingyi 1988):

\[
\begin{align*}
&\text{te'y}13 \text{ 裙 ‘skirt’} & &\text{te'y}13 \text{ te'y}13 \text{ 裙 裙} & &\text{‘children’s skirt’} \\
&i53 \text{ 椅 ‘chair’} & &i53i53 \text{ 椅 椅} & &\text{‘small chair’}
\end{align*}
\]

c. Layiping dialect of Miao language (Ma et al. 1991):

\[
\begin{align*}
&\text{te}35 \ ‘child’ & &\text{te}35 \text{ te}35 ‘\text{small child’} \\
&\text{mpin}33 ‘\text{bottle’} & &\text{mpin}33 \text{ mpin}33 ‘\text{small bottle’}
\end{align*}
\]

d. Lushootseed (Alderete et al 1999):

\[
\begin{align*}
&\text{tələw-il} & &\text{tɪ-tələw’-il} & &\text{‘run’/‘jog’} \\
&\text{č’λ’áʔ} & &\text{č’i-č’λ’áʔ} & &\text{‘rock’/‘little rock’} \\
&\text{cáles} & &\text{čá-čales} & &\text{‘hand’/‘little hand’}
\end{align*}
\]

In (1a-c), the original forms are composed of a single syllable. Corresponding to these monosyllabic forms are disyllabic ones which obviously result from the reduplication of monosyllables. Furthermore, these disyllabic forms consistently express the meaning of SMALLNESS. In view of these facts, it is clear that these examples reflect diminutive reduplication. The same holds true in (1d), although these examples exhibit a partial reduplication which differs from the total reduplication shown in (1b,c). There are innumerable cases like this in modern languages. Given the frequency of reduplication, especially in modern Chinese, one expects to find parallels in OC.

Turning our attention towards reduplication in OC, many total reduplication forms, such as linlin cluir, crystalline’ and haohao 浩浩 ‘wide and great’, which are found in the Shijing, immediately come to mind. These total reduplication forms appear frequently in OC; however, their morphological forms imply something different than what is seen in (1). That is, they

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2 In the examples of Chinese Fuzhou dialect (1a), it is found that the two syllables of each reduplicative form remain intact in terms of segments. Nevertheless, with regard to the tonal values, we can find that the tones of the first syllables are either middle falling tone (31) or low tone (11), which are obviously derived during the reduplication process. So, (1a,d) should be properly treated as partial (or modified) reduplication examples. It should be noted that the patterns of tone sandhi in Chinese Fuzhou dialect differ with respect to whether they exist in reduplication words or in non-reduplication words (See Liang Yuzhang 1983:178).

3 One more interesting phenomenon worth pointing out is that in the vast areas of China many content words can be duplicated in conversation with small children. In addition, almost all babies have an infant name composed of two identical syllables, especially baby girls in urban areas of China.

50
predominantly denote a kind of sense usually signaled by adjectives (further discussion will be
given in Chapter Three). On the other hand, we do find a few binomial forms which resemble
reduplication words. For example, there is a line in the *Shijing* 28 that reads yán yán yú fēi 燕燕 
子飛 ‘The swallows go flying.’ (Karlgren 1950:16) The monosyllabic word yán 燕 ‘swallow’ is
repeated here, but yán yán 燕燕 is not related to the cases of diminutive reduplication presented
in (1). The reason is that this binom is actually not a real reduplicative form. Thus, it might
appear that there is no diminutive reduplication in OC. However, this conclusion actually does
not conform to reality. As we will see below, in OC there are many binoms which signal
SMALLNESS. These binoms actually stem from diminutive reduplication. The difference is that
the diminutive reduplication presented in (1) occurs in both total reduplication and modified
reduplication, while the OC diminutive reduplication only occurs in partial reduplication. At this
juncture, I shall investigate the OC case, observing, first, the examples in (2). It should be noted
that the information in each example includes pinyin (showing the modern standard Mandarin
pronunciation), Chinese characters, OC reconstruction, EMC value, gloss, and source.

(2) a. fúyóu 好螵虫*bēw lèw > EMC buw juw, ‘larval mayfly’, (*Shijing*)
   b. tángláng 螟蝗 *dán ráŋ > EMC daŋ laŋ ‘mantis’ (*Zhuangzi*)
   c. mínglíng 螟蛉 *mánjí ráŋj > EMC mejŋ leŋŋ, ‘caterpillar’, (*Shijing*)
   d. rúlú 茹螺 *náŋ ráŋ > EMC nǐŋ 1āŋ, ‘madder (a kind of grass)’, (*Shijing*)
   e. dùlù 戳儡 *dák 5ráŋ > EMC děwk 1ōwk ‘small fishnet’ (*Guoyu*, *Shuowen*)
   f. púlú 蓦儡 *báŋ ráŋ > EMC bō lō, ‘solitary wasp’, (*Liji, Erya*)
   g. diāoliáo 鳥鵷 *tjáw rjáw > EMC tēw lōw, ‘kind of bird which eats worms inside of
      reeds’ (*Erya*)

It seems acceptable for Karlgren to translate this yán yán 燕燕 in a plural sense. But it would be going too far to
draw the conclusion that there is plural reduplication in OC. There do not seem to be other parallel examples with
which to establish such a pattern. In my opinion, yán yán 燕燕 results from rhetorical repetition in poetry; it does not
differ, in this respect, from huángniáo huángniáo 黃鳥 黃鳥 ‘yellow bird, yellow bird’ as in the
*Shijing* 187: 黃鳥黃鳥，無集于桑 ‘yellow birds, yellow birds, do not settle on the mulberry tree.’ (Karlgren 1950:129). See the further
discussion in Chapter Three below.

The *Guoyu*. Luyu: 水虞於是禁置罔罟 ‘Then the official of fishery (sent an order to) forbid spreading rabbit nets
and small fishnets.’ Wei Zhao’s 魏昭 (204-273) commented, (罔罟), 小网也 ‘Dùlù denotes small fishnet.’

51
The above data all come from Classical Chinese. Our first impression of these data is probably that these forms may really be extraordinary semantic items. As discussed in Chapter One, one prominent characteristic concerning the phonological shape of OC words is their basic monosyllabic structure. In contrast to this, the items listed in (2) are all disyllabic. We know that OC does allow words consisting of two syllables. The crucial point is that these disyllabic forms cannot be semantically decomposed. In other words, the component parts of each binom cannot stand independently; if the binom is broken into separate components, these components either take on meanings which are unrelated to the binom, or do not take on any meaning. For example, neither dü 罡 nor lù 露 ever stand alone (cf., 2e). In (2f), pù 蒲 and lù 盧 may denote ‘rushes, reeds’ and ‘food vessel; black’ respectively, but as far as I am aware these meanings cannot be associated with the meaning of the whole binom (‘solitary wasp’). In line with this fact, these binoms cannot be treated as normal compound words consisting of two morphemes; however, all these binoms are undoubtedly linguistic units (words). Considering how their phonological shape seems to contradict the basic monosyllabic structure of OC vocabulary, and simultaneously considering the fact they are not normal disyllabic compounds either, the subsequent question should be what are they and how were they produced? The following investigation into their phonological structure and semantic implications will prove helpful in answering this question.

In considering the characteristics of their phonological components, it is possible to recognize two general tendencies which run through all these binoms. The first is that the two syllables of each binom share identical finals (including the prosodic feature specification), that is, *-əŋ (2a), *-əŋ (2b), *əŋ (2c), *-əŋ (2d), *-jaw (2e), *-jáw (2f), *-jáw (2g), *-ajs (2h). The other is that the onsets (initials) of the second syllables are exclusively a liquid, *l- or *r-. In view of the fact that the two component parts of all these binoms share identical finals, what immediately comes to mind is that all these forms result from reduplication. At the same time, the two component parts differ in respect to their initial, which seems to refute this reduplication hypothesis. However, since a liquid initial consistently appears in the second syllable, and this
liquid is possibly treated as some kind of fixed segment during reduplication, such an initial contrast in fact does not work against the reduplication hypothesis.

Apart from the phonological evidence, semantic implications common to all of the binoms seen in (2) also support the assumption that they stem from reduplication. Observing what these binoms express, it appears possible to associate a meaning of SMALLNESS to all of them. For example, (2a-c,f) all refer to insects which, of course, are small. The binoms in (2d,e,g) refer to small things too, such as bird and small net. The last one, bili 薖荔 ‘climbing fig’, does not seem to follow this pattern at first, but as a kind of trailing plant it cannot be considered “big” in comparison with many other plants -- the average tree for instance. Recall what the forms in (1) above denote; the common semantic implication found there is exactly the same as what is attested here. That is, all binoms in both (1) and (2) share a common meaning: SMALLNESS. Since the binoms in modern languages which express SMALLNESS are certainly derived from reduplication, there is no reason not to believe that the binoms in OC, like those found in (2), are also derived from the same form of diminutive reduplication.

At this point, we cannot help asking why so many languages choose the same device to convey an identical meaning. I shall offer an explanation for this query based on cognitive semantics. In line with cognition semantics, reduplication is diagrammatically iconic. As we know, duplication of one thing results in the emergence of other things. From the point of view of cognition, an individual inside its peer group looks less prominent (smaller) than when standing all alone, apart from others. The reduplication of a form becomes an ideal device for a language to capture this perception, since the linguistic behavior of this device mirrors what people have recognized in the objective world. In short, both modern examples and theoretical analysis support the claim that the OC binoms in (2) are products of diminutive reduplication.

I hope that the above discussion has – at least in a preliminary sense – established that reduplication is instantiated in (2). However, the directional implication of these examples still remains unclear. We have not distinguished the two component parts into base and reduplicant, nor have we shown the direction in which the reduplication operates. Before going into detail, it should be noted that the directional implications of the cases found in (1) are different. The reduplication in (1b) is non-directional, since the component parts in each reduplicative word are identical and we simply do not know which one is the base (it is possible to assert that either one is the base). The situation is different when we refer to the examples of reduplication in (2). Due mainly to the phonological distinction between the two component parts, a sense of direction
must be present. In other words, it should be possible to distinguish the base from the reduplicant.

A salient characteristic of the diminutive reduplication data in (2) is the liquid which is located consistently in the initial position of the second syllables. Based on this fact, we are sure that the second syllable should be the reduplicant; consequently the first syllable should be the base. The basic argument for this is that the base syllables are picked at random from the OC syllable inventory; therefore, it is inconceivable that these syllables could share a fixed segment like a liquid onset. Furthermore, because the base is in front of the reduplicant, the diminutive reduplication should be incorporated into the progressive pattern.

Nevertheless, there is still a problem associated with the treatment of the first syllable as the base; that is, we apparently cannot find an ancestral monosyllabic word for almost any of these binoms. For example, fúyóu 妨蜑 *béw lèw > EMC buw juw, ‘larval mayfly’ (2a) certainly looks like a reduplicative form, but there does not seem to be any evidence indicating that fú 妨 can represent the sense of larval mayfly or any other sense related to larval mayfly by itself. This case exemplifies a difficult problem which is frequently encountered in a historical linguistic study. On the one hand, a long history has blurred the origin of the word so much that it is hard for modern scholars to get to the root of the matter. On the other hand, the base is related in meaning to the whole reduplicative form in a quite peculiar way; thus it is not easily understood. In other words, there should be a real base in each of the examples in (2); the problem is that it is difficult to uncover and understand.

After scrutinizing many cases, I have arrived at the following conclusion: when an object is supposed to be named through reduplication, a word which denotes a characteristic of that object is possibly chosen as the base. We know that one object can have many characteristics. Consequently, the base could viably be chosen from many words. Under these conditions, the semantic relationship between the base and the reduplicative word is feasibly very loose, especially from the point of view of later ages. This is the reason why it is very hard for us to recognize the first syllable as the base.

To illustrate this point, let us look at how ‘larval mayfly’ is named through reduplication in ancient Chinese. The larval mayfly can be considered to be light, thin, and black. It can also be described as an insect that is able to float, jump, and move quickly. These characteristics can be summarized in (3).
Mayfly’s (larval form) potential characteristics (the form in parentheses is the correlate in ancient Chinese):

- Light (qīng 輕)
- Thin (xi 細, xiān 纖)
- Black (hēi 黑, wū 魚)
- Jumping (yuè 躍, tiào 跳)
- Floating (fú 浮, piāo 漂)
- Moving quickly (sù 速, jí 疾, jié 捷)

When the ancient Chinese people create a name for this insect through reduplication, from a theoretical point of view any of these characteristics could serve as the base; that is, any of these Chinese monosyllabic forms could serve as the base. In fact, they settled on the characteristic: “floating”. As seen in (3) the word which denotes “floating” in Chinese is fú 浮 and it was this word that was utilized as the base. Eventually, the reduplication of this base produced the reduplicated form fùyóu 嬰蜉 bów low which means ‘larval mayfly’.

The semantic relationship between the base fú 浮 and fùyóu 嬰蜉 may appear to be loose and it is hard for us to imagine that reduplicating a base meaning ‘floating’ could produce a disyllabic form meaning ‘larval mayfly’. However, such is the case. We shall refer to this as a quasi-base, due to its peculiar semantic relationship with the whole binom, in order to distinguish it from the normal base like rén 人 ‘person’ for rénrén 人人 ‘each person’ in which there is no question of meaning and form.

In order to further confirm this quasi-base hypothesis, I would like to quote one attested case in a modern Chinese dialect. Let us review the examples in (4).

(4) Chinese Guizhou Dafang 貴州大方 dialect (Li Lan 李藍 1987):

<table>
<thead>
<tr>
<th></th>
<th>飛 ‘to fly’</th>
<th>飛飛 飛 ‘paper slip’</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>fēi 飛</td>
<td>fēifēi 飛飛</td>
</tr>
<tr>
<td>b.</td>
<td>jiāo 揪 ‘to stir’</td>
<td>jiāojiāo 揪揪 ‘thin gruel, congee’</td>
</tr>
<tr>
<td>c.</td>
<td>cā 擦 ‘to erase’</td>
<td>cācā 擦擦 ‘(blackboard) eraser’</td>
</tr>
<tr>
<td>d.</td>
<td>ruǎn 軟 ‘soft’</td>
<td>ruǎnuǎn 軟軟 ‘handle (referring to one’s weakness or error that others may use as coercion against this person)’</td>
</tr>
</tbody>
</table>

8 Fú 浮 is graphically changed as fù 嬰 in fùyóu 嬰蜉 ‘larval mayfly’.
9 All these five forms are total reduplicative words. Since the author does not provide us with the dialect pronunciation, I add pinyin for standard Mandarin pronunciation. It is not harmful to do so for the present purpose.
In (4a), the monosyllabic form 飛 飛 means ‘to fly’, while the corresponding reduplicative form 飛 飛 飛 denotes ‘paper slip’. Since a paper slip is so tiny and light that it tends to float in the air (to fly), it is not difficult for us to recognize the logical relationship between the base and the corresponding reduplicative form in meaning. But we have to allow that such a relationship is quite loose. In the world, the things which are potentially able to fly or float in the air are numerous. There is really no way to account for why reduplication of a word meaning ‘to fly’ can produce a disyllabic form meaning ‘paper slip’ in that dialect. In (4b), 蹂 攪 means ‘to stir’. The corresponding reduplicative form is 蹂 蹂 攪 攪, which means ‘thin gruel, congee’, because when cooking this kind of food one has to keep stirring. A semantic relationship exists between the base and the reduplicative form, but this relationship is very loose. The same holds true in all other examples (4c-e) in which the base is in meaning related to the corresponding reduplicative form in a tenuous way. Such a loose relationship between the base and the reduplicative form is the same as that between 飮 飨 (飮) and 食 蝌. There will not be a surprise when we see that reduplication of a word meaning ‘float’ produces a disyllabic form meaning ‘larval mayfly’. Thus, since these modern examples parallel 食 蝌 and therefore support the hypothesis about the formation of 食 蝌, we can be reasonably sure that the first syllable 食 (浮) is the base.

We have seen that in this kind of reduplication the base can have a loose relationship in meaning with that of the reduplicative form. This is the basic reason why in many of the examples in (2) the base is not obviously related to the reduplicant form despite the fact we can see from their meaning (SMALLNESS) and their phonological properties (same rhyme and fixed liquid onset) that they are reduplicative forms. However, on the basis of parallel cases we generally understand what the base should be. Moreover, this understanding would be further helped if we considered the possibility that phonetic symbolism (Jakobson 1960, among others) was involved in this reduplication process. It has been a long time since scholars assigned meaning to words based on the intrinsic signification of their sound. This intrinsic signification possibly relies on the conditions of articulation and, ultimately, of perception. For instance, the vowel i would signify acuteness and the vowel a, roundness (Ducrot and Todorov 1979 [1971]:255). This attractive proposal may not be cross-linguistically applicable since it is difficult to affirm the universality of such meanings. Nevertheless, we should not stick to the...
concrete conclusions; instead, if we absorb the reasonable crux of the theory and modify its meaning or applications, it will prove helpful in thinking through the base problem. Unlike canonical phonetic symbolism, which lays stress on the intrinsic significance between the meaning and the phoneme, we will pay attention to the symbolic significance which correlates with syllables. It is commonly known that every Chinese syllable has been semantically specified; often a single syllable will possess more than one meaning. There is never a case where a Chinese syllable is meaningless. Under this condition, whenever an available syllable is articulated, and eventually perceived, it always has the potential to trigger an association with some meaning. This is similar to the so-called “semantic rhyme”, in which the sound resemblance creates an impression of semantic proximity (Ducrot and Todorov 1979 [1971]:191). Crucially, in order to create a new expression by means of a process of word formation, people thus are able to get a syllable with perceived meaning, and they can treat it as a base on which the process operates incipiently. It is possible that the perceived meaning stems from an association or impression; thus, it is imaginable that in a reduplicative word formed on this kind of base the base must have a loose relationship in meaning with the whole reduplicative word. Thus it should not be surprising that we are able to recognize the base but unable to show the exact semantic relationship between base and the whole binom.10

The above discussion shows that the base is related in meaning to the reduplicative in a loose way; therefore the base is called quasi-base. On the other hand, the bases in this kind of reduplication are not all quasi-bases; instead, it is found that some overt bases, whose meaning is clearly related with that of the whole form, are also involved. I shall discuss one example.

In the Shijing 154, there is a line which reads, qíyuè shí guā, bāyuè duān hu μ "in the seventh month we eat melons; in the eighth month we cut the bottle gourds." (Karlgren 1950: 99). What attracts me to this line is the last word hu μ *wáy > EMC yo, which means bottle gourd, as reflected in Karlgren’s translation. In later texts such as the Shishuo

10 The analysis of why the base is not easily pinpointed is supported by modern dialect studies. For instance, according to Deng Yurong (1995), who presents a complete description of reduplication in Tengxian dialect (a Cantonese dialect in Guangxi), among 121 reduplicative words which fall into a progressive pattern, there are 25 cases in which the bases themselves are meaningless. That is to say, the syllables which should be treated as the base are never independently used and only appear in these reduplicative forms. This indicates that what is repeated in these 25 cases of reduplication are syllables with some kind of semantic association or impression.
xinyu, the same meaning is represented by a disyllabic word húlú 壶臿 \(^{11}\) *wáy ráy > EMC yó ló. Because the hú and húlú forms share a similar meaning and are partially identical in terms of shape (that is, hú) there must be an etymological link between them. As we know, the Shijing is about one thousand years older than Shishuo xinyu. On the other hand, the fact that lú itself means ‘food vessel; black’, which is not semantically linked to húlú in any way, negates the possibility of treating húlú as a compound of some sort. Consequently, one may safely state that húlú is a derivative of hú through some linguistic processes.\(^{12}\) Furthermore, examining the phonological relationship between hú and lú, we find that they share the final (*-áy) but differ in terms of their respective onsets (*w- > EMC yw vs. *r- > EMC l-). In comparing the morphological and phonological implications evident in húlú with those of the diminutive reduplication it is clear that the similarity between them is significant. As far as the semantic implication is concerned, húlú could be characterized in terms of SMALLNESS,\(^{13}\) which is common to all cases shown in (1), (2), and (4). With regard to the phonological component, the alternation between hú and lú is exactly the same as what is implied in those of (2). Based on this similarity, it is reasonable to interpret húlú as a case of diminutive reduplication. On the other hand, since húlú presents some definite properties such as the independent use of the base, it can be viewed as supporting evidence confirming the reality of what has been generalized from cases in (2).

So far, we have seen that the base in this kind of reduplication is possibly either a quasi-base or an overt base. But this distinction cannot cover up the fundamental agreement between them. They should be categorized into an identical reduplication pattern. Given the fact that these bases are always occupying the first syllable position, it is obvious that these reduplicative words result from progressive reduplication. This pattern can be formulated as in (5) below.

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\(^{11}\) The Shishuo xinyu. Jian’ao (劉道真) 初無他言, 唯問東吳有長柄壺臿, 僞得種來不? (Liu Daozhen) at the beginning said nothing else but only asked “there are bottle gourds with a long handle [planted] in Dongwu. Are you able to plant them or not?” Húlú 壺臿 is later written as húlú 葫臿.

\(^{12}\) The case of húlú is similar to the case instantiated in Chinese Pingyao dialect (cf., 1b) in which a noun is reduplicated in order to denote “smallness”. The difference between the two cases is that húlú reflects a modified reduplication case, while the case in Chinese Pingyao dialect refers to total reduplication.

\(^{13}\) A bottle gourd may not be very small. But regarding its good and round shape the bottle gourd is possibly considered something which is as lovely as something small.
Progressive reduplication pattern in OC (σ: syllable; O: onset; R: rhyme; subscript letter for identification of the same segments; L: liquid):  

Base + Reduplicant  

This figure represents the phonological alternation during progressive reduplication. The most prominent change is the onset of the base syllable which is consistently changed to a liquid onset in the second syllable (reduplicant). The OC diminutive reduplication falls into this pattern.  

As a reduplication pattern, this progressive case should cover many more examples. On the other hand, these examples can be used to verify the reality of the pattern. With this in mind, I shall provide further examples seen in (6) which parallel those in (2).

(6)  
a. fuyû 復育 *bêk’ lêk’ > EMC buwk juwk, ‘pupa of cicada’, (Lunheng)  
b. jiāoliāo 賞賑 *kjawʔ rjawʔ > EMC kew’ lêw’, ‘kind of small leggings’, (Fangyan)  
c. gōulōu 瓜虍 *kât rât 16 > EMC kew lêw, ‘Trichosanthes cucumeroides, a kind of plant’, (Guangya)  
d. wăngliāng 蝶蠅 *mânʔ râŋʔ > EMC muâŋ’ liâŋ’, ‘a monster similar to a three-year-old child’ 17, (Guoyu, Shuowen)

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14 This pattern is applicable just to the base syllables with non-liquid onset. I shall discuss base syllables with a liquid onset later in this chapter.  
15 As for why there is such a correspondence between the diminutive reduplication and the progressive pattern, why phonological alternation operates in the onset position of the second syllable, and how segments alternate in the onset position of the second syllable, I shall discuss these issues in Chapter Four, as well as later in this chapter.  
16 Since the phonetic of lâu 蝶 connects with a velar in the xiéshēng series, it was originally supposed to have a velar component in the initial position. But in the Guangya time (later East Han time or the early Three Kingdoms (220-265)), this velar component would have been lost.  
17 The definition of wăngliāng 蝶蠅 is found in Shuowen in which it reads that 蝶蠅，山川之精物也。淮南王說蝶蠅狀如三歲小兒…… ‘Wăngliāng refers to a spirit of some sort in mountains and rivers. According to
All examples in (6) adhere to the progressive pattern since their bases antecede the reduplicants. Moreover, the two component parts differ from each other in that the onset position of the second syllable is consistently characterized by a liquid *r- (>EMC 1-) or *l- (>EMC j-). Besides, since the above examples all refer to things which can be defined in terms of SMALLNESS they can all be incorporated into the category of the diminutive reduplication.

2.1.2 Vivid reduplication

In the above section, I have established a progressive reduplication pattern by illustrating many reduplicative nouns which convey a diminutive sense. As a matter of fact, this robust phonological pattern is not only applicable to nouns, but also to other word classes involving different meanings. The data in (7) are all from Classical Chinese.

(7)  

a. cōngróng 從容 *tsʰáŋ⁴ lāŋ⁴ > EMC tsʰuawŋ juawŋ, ‘at leisure, casually’,  
      (Shangshu, Liji)

b. wēiyí 委蛇 *ʔaw láː > EMC ?wia jia, ‘winding, roundabout’, (Shijing)

c. xiāoyào 遊遨 *sǎw láː > EMC siaw jiaj, ‘free and unfettered’, (Zhuangzi)

d. yōuyóu 優游 *ʔəw ləw > EMC ?uw juw, ‘at leisure’, (Shijing)

Huainanwang, the shape of wāngliāng looks like a three-year-old child’. The thing described here is doubtable with regard to its reality, but one feature of this “spirit thing” for sure is the “smallness”.

18 According to Lu Deming’s 陸德明 (c. 550-c. 630) fanqie spelling (wēi 委, yūwēifān 於危反), wēi 委 is a level tone character. In the context of OC we can also place wēi 委 in the gē 歌 rhyme group since both hé 禾 (the phonetic of wēi 委 -according to Yan Kejun’s 嚴可均 (1762-1843) Shuowen Shenglei 説文聲類) and wēi 委 (final speller of fanqie for wēi 委) are classified as in this rhyme group.
Let us first examine the phonological properties of these binoms by turning our attention to two common characteristics which run through all of the above forms; that is, the two component parts of the binoms share an identical final (including prosodic feature specification); the onsets of the second syllables of the binoms are formed exclusively by either the liquid *l- > EMC j- or the liquid *r- > EMC 1-. Recalling the similar phonological properties that we have recognized in diminutive reduplication above, we are likewise motivated to hypothesize that these binoms derive from progressive reduplication. This is especially true if we take the following points into consideration. First, it is possible that none, or only one, of the two component parts of binoms listed in (7) is semantically related to the meaning of the whole binom.\(^{20}\) This form of reduplication never allows both parts of the binom to share a semantic relationship with the combined whole. For instance, neither xiǎo 小 nor yáo 遠 share semantic features with the binom xiǎoyáo 小遙 ‘free and unfettered’ (7c);\(^{21}\) although we may say that wàng 望 ‘look over’ is linked semantically to the meaning of wàngyáng 望洋 (7f) ‘description for looking up’, yáng 洋.

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19 Why the coda *-s is not attested in the second syllable is still at issue. In Guangyun, wàng also has a level tone pronunciation (wù fāng qiè 武方切). If this pronunciation can be applied in the first syllable of wàngyáng 望洋, then, it is reasonable not to reconstruct this coda.

20 When we say that none of the two component parts of binoms is semantically related to the meaning of the whole binom, that means we have not pinpointed the base syllable. In accordance with our theoretical and empirical experience, seen in the above discussion on diminutive reduplication, there must be a base, but this base is in meaning related with the whole binom in a loose way.

21 xiǎo 小 can only appear in this binom, while yáo 遠 may denote ‘distant’ by itself.
bears no such relationship. Therefore, it is safe to assume that these binoms are not compound words; that is, this binom is not a product of combination of two independent morphemes.

Second, if some semantic relation between the binomial component parts and the whole binom does exist, it is always the first part that is related as opposed to the second part. Besides wàngyáng 望洋 (7f), kuànglàng 堉 城(7j) ‘spacious and open all sides’ can also be used to substantiate this argument, since the meaning of kuàng 埉 ‘spacious, wildness’ is related to the meaning of the whole binom. Furthermore, in the Shangshu there is the word yōng 雍 which means ‘harmonious’, while in the Shiji, a work written several hundred years later than the Shangshu, we find a binom yōngróng 雍容 *?àn̆4 lăn̆4 > EMC ?uawn juawn, ‘natural, graceful and poised’. There is obviously a semantic relationship between yōng 雍 and yōngróng 雍容. Therefore, if we allow that these binoms are products of reduplication, the first part should be the base.

Third, the fact that the two component parts in all these examples share identical finals indicates that they belong to the category of reduplication. Furthermore, since the second part (syllable) always contains a fixed segment (a liquid) in the onset position, an obvious derivative of the reduplication process, the reduplication in question can be only interpreted as a progressive one.

The phonological properties and semantic implications reflected in the data seen in (7) show us that those binoms all derive from progressive reduplication. The subsequent question is how to characterize them with respect to their semantic significance. Let us address this question by probing their syntactic distribution and general meaning.

In focusing on their syntactic distribution, the evidence shows that these binoms can serve as predicate, adverbial modifier, and nominal modifier with zhī 之 inserted.

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22 The Shangshu-Yaodian: xìe hé wàn bāng, limin yù biàn shí yōng 雍 ‘Finally, he united and harmonized the myriad States of the empire; and lo! The black-hair people were transformed. The result was universal concord’. (Legge 1865)

23 Shiji-Sima Xiangru zhuan: Xianru zhī Linqióng, zòng chēji, yōngróng xiányā shēn dū 相如之臨邛，從車騎，雍容 傾雅甚都 ‘Xianru went to Linqióng with chariots and cavaliers following and he is graceful, elegant, and very handsome’. Since róng 容 itself means ‘looks, appearance’, one may argue that róng 容 is semantically related to yōngróng 雍容. If this is the case, yōngróng 雍容 becomes a noun phrase in which the adjective yōng 雍 modifies the noun róng 容. This assumption is not supported, however, because yōngróng 雍容 does not behave like a noun; and in the present case it is parallel with the adjective xiányā 傾雅 ‘elegant’.

62
(8) Syntactic distribution of the binoms in (7) (the underlined are the binoms in question):

a. narrative predicate: liăo xiăoyăo yī xiăngyang 聊逍遙以相羊 ‘be free and easy and strolling about for a moment’. *(Chuci • Lisao)*

b. adverbial modifier: wăngyang xiăng ruò ér tàn 望洋向若而歎 ‘[Hebo] looked up at the deity Ruo and sighed.’ *(Zhuangzi)*

c. nominal modifier with zhī 之: mènglăng zhī yán 孟浪之言 ‘impetuous words’ *(Zhuangzi)*

The syntactic behavior shown in (8) indicates that these binoms resemble adjectives, adverbs, or verbs, but are not exactly identical to any of them. The similarities and differences with respect to syntactic functions are illustrated in (9) below. Note that in the following table the plus mark signals application, the minus mark represents non-application, and the parenthesized mark indicates that there are some exceptional cases.

(9)

<table>
<thead>
<tr>
<th>Binoms in (8)</th>
<th>predicate</th>
<th>adverbial modifier</th>
<th>nominal modifier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+</td>
<td>+</td>
<td>(-)</td>
</tr>
<tr>
<td>OC adjective</td>
<td>+</td>
<td>+</td>
<td>(+)²⁴</td>
</tr>
<tr>
<td>OC adverb²⁵</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>OC verb</td>
<td>+</td>
<td>-</td>
<td>(-)²⁶</td>
</tr>
</tbody>
</table>

²⁴ Monosyllabic adjectives do not require zhī 之 but disyllabic adjectives usually require zhī 之.
²⁵ According to Hé Leshi et al. (1985), OC adverb class (fūci 副詞) is defined as words which are mainly employed to modify verb, adjective, nominal predicate, and whole sentence.
²⁶ Takashima (1996a) argues that the verb may directly modify a head noun in Oracle-Bone Inscriptions. For example, in Jíchōu bù zhēn jīn chū Qīāng yōu huò wéi 己丑卜贞今出羌有獲圍 *(Heji 6605)* ‘Divining on the jíchōu day, tested: as for the Qīāng who took to the field now, (we) shall in fact catch those who are surrounding (us)’, the verb phrase jīn chū 今出 ‘take to the field now’ directly modifies the noun Qīāng 羌 ‘name of a tribe’. However, the verb (here adjective is not included) no longer directly modifies the noun in Classical Chinese. Examples such as liushuǐ 流水 *(Shijing, Zhuangzi)* ‘flowing water’ and zōumǎ 走馬 *(Xunzi)* ‘horse good at running’, in my opinion, represent a case of word formation. It should be noted that the disyllabic verb possibly serves as modifier of a noun but the connective particle zhī 之 is needed.
As shown in (9), the binoms do not resemble adverbs the most since they are identical in terms of just one value, and different on two accounts. With a higher degree of similarity, two identical values are acknowledged in comparison with the adjective and the verb. Nevertheless, the single opposite value differentiating the binom from the adjective and verb does not allow us to group them together. So we may propose to treat these binoms as an independent category or a sub-category under adjective or verb. Syntactic analysis such as this is helpful in understanding the distribution of this binom, however, more important work is still required to reveal the general grammatical function covering all these binoms. In this regard, we must search for this general grammatical function, which can be taken as the motivation for the emergence of this kind of progressive reduplication. Ancient commentaries are very enlightening with regard to this question.

Due mainly to the special internal structure and elusive semantic implications of these binoms, scholars became interested in interpreting them as far back as two thousand years ago. When ancient scholars commented on the binoms of this kind that they found in the classics, they frequently defined them in terms of ‘...mào 貌’ (‘appearance of; description of’) as shown below.

(10) a. The *Shijing* 18: tui shi zi gōng, wèiyí wèiyí 退食自公，委蛇 委蛇。‘They withdraw for their meal from the court, oh, how complaisant and gracious!’
(Karlgren 1950:10) Zheng Xuan 鄭玄 (127-200) commentated:
“wèiyí, wèiqū zīdē zhī mào 委蛇，委曲自得之貌 ‘wèiyí means a description of roundaboutness and self-satisfaction.’”

b. Cui Zhuan 崔譔 (a Jin (265-420) scholar) defined the binom mènglàng 孟浪 in the *Zhuangzi* as bù jīngyāo zhī mào 不精要之貌 ‘a description of impetuousness’.
(Quoted by Lu Deming in the *Jingdian Shiwen*)

(c. 1265-1896) defined the binom qiángyáng 強揚, in the *Zhuangzi* as yùndòng zhī mào 運動之貌 ‘a description of movement’.

Since Chinese adjectives in nature belong to the verb category (see discussion in Chao 1968, Pulleyblank 1995a:24-25), there is no logical conflict in treating these binoms as a sub-category under the adjective or verb.
Ancient scholars of course never reached a consensus on the use of terminology in their commentaries, yet they consistently define the binoms as shown in (10) with the formation “...mào 貌”. This fact explicitly reflects that they characterized these binoms as descriptive words since “...mào 貌” here literally denotes ‘appearance of, description of’. The generalization for the nature of these binoms made by ancient scholars is basically correct. In view of the examples in (7), it is found that all of them are employed to describe the way of activity or the appearance of something which is either concrete or abstract. In the comparison of these binoms with their monosyllabic correlates (i.e., the bases), it is found that the latter are usually used to determine the nature of something or some activity; the former usually signal a scene, appearance, atmosphere, circumstances, state, manner, and etc., showing an impressive panorama. For instance, kuàng 壤 itself means ‘spacious’, while kuàngláng 壤 lăng expresses how it looks when something or some activity is potentially characterized by “spacious”, usually also connoting a dreary atmosphere and miserable emotional tone. One piece of evidence for the existence of this additional connotation is that kuàngláng 壤 lăng later develops the meaning ‘wretched, sad’, as in the Chuci: Jiubian (written as 慕侯): Chuānghuāng kuàngláng xī qù gù ěr jiù xīn 愕倪 慕侯兮去故而就新 ‘With wretched feelings, I left the old for the new’. Let us look at another instance, that is, cōngróng 從 容 (7a). Cōng 從 means ‘follow, obey’. If one simply obeys his own wish or feeling, then, he would look calm, unhurried, and at leisure. This meaning is denoted by the reduplicative form cōngróng 從 容; in other words, what is expressed by cōngróng 從 容 is the look of someone following his own pace, usually in a graceful manner. All the binoms listed in (7) consistently refer to the look of something or some activity, with some kind of additional connotation. Therefore, we can conclude that the function

28 The last example, cāngláng 沧浪 (7k) is a proper noun, but this is doubtful since the names of rivers in ancient time seem all monosyllabic. This usage quite possibly results from secondary development. It might have been descriptive since cāngláng 沧浪 can be used to describe the blue color of water, though evidence is found in transmitted texts written later in the Jin dynasty (265-420).

29 Shuowen: kuàng, ...yǐ yuē dà yē 壤 ......—曰大也 ‘kuàng also means big’.

30 Cōng 從 ‘follow, obey’ has a voiced onset, but it has a voiceless onset in the reduplicative form cōngróng 從 容. Such a voiceless/voiced alternation in a pair of cognate words is the same as what is found in other pairs such as jiàn 願 ‘to see’ / xiàn 願 (現) ‘to be seen’ and zhū 屬 (屬) ‘to attach, instruct’ / shǔ 屬 ‘to be attached, belong to’.
of this kind of reduplication is to produce a common meaning such as a scene, appearance, atmosphere, look, state, manner, plus a vivid connotation. This reduplication, then, should be labeled X-looking reduplication or "...mào 貌 reduplication or vivid reduplication; the binomial expressions arising from this can be referred to as vivid adjectives. This discovery is strongly supported by the case of modern Mandarin, for reduplication also produces a meaning of VIVIDNESS with an impressive connotation, thereby resulting in the occurrence of a vivid adjective.\textsuperscript{31}

The investigation into vivid reduplication shows that it is not a morphological process which is active only in Classical Chinese; it is also active in Later Old Chinese. One can find many more examples in works compiled during this period. In (11) below just a few are given:

(11) a. fēngróng 豐融 *pʰêŋʷ lêŋʷ > EMC pʰuŋ juŋ, ‘luxuriant, flourishing’, 
   (Hanshu)

b. zuoluó 卓犘 *t(r)á:kʷ rá:kʷ > EMC traŵk laïwk, ‘unique, superb, extraordinary’
   (Ban Gu 班固; Dianyin 典引)

c. shèyè 摄葉 *tâp láp > EMC qiap jiap, ‘poky, narrow and small’ (Yanji 嚴忌: Aishiming 慘時命)

d. díli 滴瀝 *dják jråj > EMC dejk léjk, ‘description of water, especially rain, pattering’, (Shuowen)

e. zhènlín 順顙 *têŋ’s rêŋ’s > EMC tción linʰ ‘description of few and scattered hair’
   (Shuowén)

f. kânlàn 顔顔 *kʰém? rêm? > EMC kʰem’ lêm’, ‘(of face) sallow and ugly’,
   (Shuowen)

According to Pulleyblank (1973), the voicing element *fi- (Ā (=a)) is proposed in Pulleyblank 1991b) is responsible for the occurrence of the voiced counterpart.

\textsuperscript{31} Zhu Dexi (1956, 1982) and Chao (1968) demonstrated that the reduplicative form of adjective usually bears emotional coloring meaning or the imprint of vivid description. Zhu labels these reduplicative expressions zhuàngtài xíngróngcí 狀態形容詞 ‘stative adjectives’, while Chao labels these reduplicative expressions vivid adjectives.

\textsuperscript{32} By Han times, the characters in zhēn rhyme group and in wén rhyme group had merged in rhyming.
g. bānlán 扁 爛 *prján rján > EMC peín leín, ‘multicolored and gorgeous’, (<Han> Tongsuwen 通俗文）

h. cāolāo 草 恃 *tsʰéw? rów? > EMC tsʰaw’ law’, ‘quiet, still’ (Wang Bao 王 庆: Dongxiao fu 洞箋賦)

i. wèiléi 威 蘅 *?wèl? rwèl? > EMC ?wej’ lwej’, ‘description of high mountains’ (Lunheng)

j. qiāolāo 巧 老 *kʰrów? rów? > EMC kʰaiw’ law’, ‘hollow’ (Ma Rong 馬 融: Changdi fu 長笛賦)

From either a phonological or semantic point of view, the common properties possessed by the binoms listed in (7) can all be identified in the examples given in (11); that is, the two component parts share the same final but differ with respect to onset by invariably presenting a fixed liquid in the second syllable; moreover, they are all vivid adjectives. Thus, we can see that the progressive pattern which bears vivid reduplication, as well as diminutive reduplication, remains intact in OC over a long period of time.

2.1.3. *r- (>EMC l-) and *l- (>EMC j-, d-) in the base and their impact on reduplication

Among the progressive reduplicative words demonstrated so far, the onset position of the base syllable is consistently occupied by any consonant (including glide) except the liquid. Now let us think about how this word formation will operate if the liquid occupies that position. In line with the progressive pattern that we have established, two possibilities arise as seen in (12) below.

(12) Possible progressive reduplication forms in the case of the base syllable with a liquid onset (*r and *l are two distinct OC phonemes; F represents a final; the letter in subscript is employed to identify individual finals; one underline marks one reduplicative word):

a. *r-F₁₁ r-F₁₁ or *l-F₁₁ l-F₁₁
b. *r-F₁₁ l-F₁₁ or *l-F₁₁ r-F₁₁

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If the first possibility turns out to be attested, we certainly should get many reduplicative words under total reduplication. As a matter of fact, we do get many words of this kind as seen in (13).

(13)  a. yangyang 洋洋 *lāŋ lāŋ > EMC jian jian ‘vast’ (Shijing)
      b. rongrong 融融 *lōŋ lōŋ > EMC juun juun ‘description of happiness’ (Zuozhuan)
      c. didi 惇憦 *ljêk’s ljêk’s > EMC dej’h dej’h ‘description of a kind of manner’ (Shijing)
      d. lian lian 漣漣 *rân rân > EMC lian lian ‘description of tears falling’ (Shijing)
      e. linlin 林林 *rəŋ’ rəŋ’ > EMC lin lin ‘description of slight waves’ (Shijing)

However, from the point of view of the derivational process, whether these reduplicative words are products of the progressive pattern (a kind of modified/partial reduplication) or not is still at issue since the total reduplication is also attested in OC. As will be discussed in the next chapter, total reduplication is likewise common in OC; for instance, there are 362 examples in the Shijing (Tu Ch’i-jung 1960). Thus, based only on the phonological component, it is simply impossible for us to decide which reduplication pattern, total reduplication or partial/modified reduplication, is responsible for the occurrence of the reduplicative forms seen in (13). The investigation into the semantic component, however, proves decisive in resolving this puzzle. As we have demonstrated above, the progressive reduplication generally carries two kinds of meanings, that is, diminutive and vividness, which can be strictly defined. By contrast, as will be extensively scrutinized in Chapter Three below, total reduplication actually does not express any independent meaning, rather, it evokes a kind of vivid impression which cannot be strictly defined. Crucially, these forms cannot stand alone; that is, their vivid impression almost entirely depends on the context. In checking the five reduplicative forms in (13), it is found that all of them present such a semantic implication (see further discussion in Chapter Three). In contrast, what is expressed by the reduplicative forms in (2) and (7) is an independent meaning, either SMALLNESS or VIVIDNESS, which can be strictly defined. In other words, what is expressed by the forms in (13) is different from what is expressed by the forms seen in (2) and (7). Since their semantic implications are different and the forms in (2) and (7) have been proved to be progressive reduplication forms, the reduplicative forms seen in (13) should be derivatives of total reduplication. Moreover, I will show that all total reduplicative forms consistently hold this
semantic implication, that is, vivid impression. Given this fact, the speculative forms under progressive reduplication, formulated in (12a), turn out to be examples of total reduplication.

We have argued that total reduplication forms as shown in (13) have nothing to do with progressive reduplication. The question, however, remains as to what happens when a liquid consonant occupies the onset position of the base syllable. Let us review the data in (14).

(14) a. liuli 流离 *rèw rál > EMC luw liǎ, ‘kind of bird’ (Shijing)
b. lilú 蘋蘆 *rèj ráy > EMC li ló, ‘a kind of grass’, (Guangya)
c. yóuyú 由余 *lèw láy > EMC juw jiā, ‘(name of a person in Pre-Qin)’, (Shiji)
d. láolóu 鎖錐 *rèw ráy > EMC law ló, ‘kind of arrowhead’, (Guangya)
e. yiyào 熠耀 *lèp lāws > EMC jip jiaw, ‘gleaming’ (Shijing)
f. linláng 琳琅 *rèm rán > EMC lim làn, ‘beautiful jade’ (Qu Yuan 屈原: Donghuang taiyi 東皇太一)
g. lūlì 陸離 *rèkw rál > EMC luwk liǎ, ‘varicoloured’ (Qu Yuan 屈原: Lisao離騷)
h. liliè 栗烈 *rjér rjat > EMC lit liat, ‘piercingly cold’, (Shijing)
i. yóuyán 蚧蜒 *lèw làn > EMC juw jian, ‘common house centipede’, (Fangyan)
j. lèilù 鞏鵝 *rwél ráy > EMC lwéj ló, ‘in an endless stream’, (Yang Xiong 揚雄: Yulie fu 羽獵賦)
k. lülóu 鶴鵝 *rèkw ráu > EMC luwk lów, ‘goose’ (Erya)
l. róngyu 容與 *làng láy > EMC juawn jiǎ, ‘leisurely and careless; pace up and down’, (Zhuangzi)
m. yáoyuè 姚娥 *làw lwát > EMC jiaw jwiat, ‘beautiful’ (Fangyan)
n. lánluó 禮縷 *rán ráu > EMC lam luǎ’, ‘ragged, shabby’ (Fangyan)
o. róngyi 洛漪 *làng lájts > EMC juawn jiaj, ‘(of waves) vast and mighty’ (Song Yu 宋玉: Gaotang fu 高唐賦)
p. lóulú 棗蘆 *ráus ráy > EMC lów lá, ‘kind of grass’, (Guangya)
In focusing on the semantic implications of these binoms, we can recognize that they either denote small things such as in (14a,b,e) or describe the properties of various things such as in (14g,h,l). These semantic characteristics (SMALLNESS and VIVIDNESS) certainly tally with what are usually signaled by the reduplicative forms under the progressive pattern. As for their phonological component, we find that the two syllables in each case share the onset but are quite different with respect to the final. In line with the progressive pattern, sharing the onset is understandable since the bases happen to be syllables with a liquid initial. Differentiating the final, on the other hand, is at first sight not conceivable because it is against the requirement of the progressive reduplication pattern — in accordance with this pattern, the finals in each reduplicative forms are required to be identical. Nevertheless, given this outstanding case where the liquid arises in the onset of the base syllable, it is possibly assumed that it is this liquid onset appearing in the base syllable that triggers this idiosyncratic phonological alternation with respect to their finals. A modern Chinese example supports this assumption. According to Deng Yurong (1995), monosyllabic adjectives in the Cantonese Tengxian dialect may undergo a type of progressive reduplication, consistently keeping the glottal fricative h in the onset position of the reduplicant syllable, for instances wāi 軛 mai44 ‘askew, crooked’ → mai44 hai44 t∫en231, biē 瘀 niep44231 ‘shriveled’ → niep44 hiep44 t∫en231. However, as Deng explicitly states, if a monosyllabic adjective has the h as its onset, too, this type of reduplication (with identical finals and fixed material h in the onset position of the reduplicant syllable) will fail to be applied. For

33 But note that in most of the cases the two syllables are identical in terms of their syllable type, that is, either AA (two Type A syllables) or BB (two Type B syllables).
instance, nóng 濃 hun₂3i ‘thick’ can never be reduplicated as *hun₂3i hun₂3i tʃeŋ₂3i. Thus we can see that the constraint effect between the fixed onset of the reduplicant syllable and the base onset plays a role during the reduplication process. The inference here is, if an h- really arises in the base syllable, it possibly triggers some other change in the final. This is probably just the case instantiated in (14). Returning to the OC case in question, on the other hand, if the progressive pattern is principally followed even in the case of a liquid onset found in the base syllable, the two syllables will be identical so that there will be no phonological difference between progressive reduplication (a kind of modified/partial reduplication) and total reduplication. Thus we can see that the case of the Cantonese Tengxian dialect indicates the possibility of the modification of the rhyme. The OC reduplication system possibly forced the final of the reduplicant syllable to undergo modification. Let us see what kind of generalization we can propose with regard to this kind of change in the final.

In (14a-k), the two finals in each case seem to exhibit no pattern with respect to their phonetic values. However, if our attention just focuses on their main vowels, tentatively regardless of their codas, it is found that the main vowels in the second syllables are always lower than those in the first syllables, presenting an *ə/a alternation. In response to a potential question about the reliability of reconstructions of these main vowels, let us look into the OC rhyme groups where the main vowels in question are rooted. Since the classification of syllables in terms of rhyme groups has been generally achieved, we can with assurance incorporate the first syllables in (14a-k) into rhyme groups including zhǐ 脂 yōu 幽, zhi 質, jǐ 緝, qǐn 侵, zhi 職 and the second syllables in (14a-k) into rhyme groups including yú 魚 gē 歌, xiāo 霄, yáng 陽, yuè 月, yuán 元, tān 誕. As for the phonetic values of their main vowels, a lot of evidence from Middle Chinese, modern dialects, ancient transcriptions, and typological significance support that the main vowels in the former group of OC rhymes have a feature element [-low] and those in the latter group of rhymes have [+low] (see the discussion in Chapter One). All scholars in this field would agree with this basic distinction though their reconstructions may differ in many details. It is reasonable to postulate *ə and *a, for the main vowels, to represent the phonetic discrepancies between the two groups of rhymes. Consequently, we feel confident to say that the main vowels in the second syllables are lower than those in the first syllables.

\[34 \text{ tʃeŋ₂3i is a suffix meaning 'description of'.} \]
This *ə/*a (or [-low]/[+low]) distinction is significant for understanding what has happened in the examples of (14). As we know, the low vowel is more prominent than the non-low vowel with respect to its sonority (cf., Ladefoged 1993). Thus, the change of *ə to *a in the reduplication process typically reflects the raising of the sonority level, which is actually required by universal or language-specific constraints (see the discussion in Chapter Four below). In any event, the sonority competition between the two syllables is determined by the main vowels since the main vowel invariably occupies the peak position of the syllable. Under this condition, even without recourse to the codas, we are still reasonably sure to make a contrast between the two syllables with respect to the degree of the sonority of syllables.

The rising of the sonority level with respect to the main vowels cannot be found in (14k-q), but this is understandable since the base has already got the most sonorant vowel a, and it is impossible for the reduplicant (the second syllable) to raise the sonority level further. The last four reduplicative words (14r,s,t,u) are really not understandable. We don't know why the low vowel *a doesn't appear in the reduplicant syllable (14r) since it is supposed to do so by our hypothesis on the basis of the fact that non-low vowel *ə appears in the base syllable. We don't know why the sonority contrast in (22s,t,u) is also opposite to the principle established just now.

The above analysis leads us to conclude that, when the base syllable has a liquid onset in progressive reduplication, the level of sonority will be raised in the reduplicant syllable. Thus, we can see that the phenomenon covered by this conclusion is phonologically conditioned; therefore, it is possible to formulate another progressive pattern, as opposed to the pattern shown in (5) above.

(15) Progressive reduplication pattern in OC (σ: syllable; O: onset; R: rhyme; subscript letter for identification of the same segments; L: liquid):

Base + Reduplicant

Base Base + Reduplicant

Base

\[ \sigma \]

\[ O_x \]

\[ L_a -\theta/-a- \]

\[ R_y \]

\[ O_y \]

\[ L_a -\theta/-a- \]

\[ R_z \]

\[ L_s -a- \]
Apart from the examples in (14), there are some other ones that present idiosyncratic behavior when they have a liquid in the onset of the base syllable. This formation can be formulated as \( r-F_x l-F_x \), as shown in the first example in (12b) above. Look at examples in (16).

(16)  

(a)  lāngdāng 蘭蕪 *ráŋs láŋs > EMC lan⁵² daŋ¹, ‘kind of poisonous grass’  
(Guangya)  

(b)  lātà 莴蔥 *rěp lēp > EMC lěp děp, ‘turnip’ (Fangyan)  

(c)  lātà 莴蔥 *rěp lēp > EMC lěp dāp, ‘description of bird flying’ (Guangya)  

These three examples consistently take *r- (> EMC l-) as the onset of the base syllable and *l- (> EMC j-, d-) as the onset of the reduplicant syllables. Judging from the semantic component, they are possibly reduplicative words under the progressive pattern because they likewise denote small thing (16a,b; grass and vegetable are normally considered as small) or some kind of appearance (16c). On the other hand, the two liquids are regularly distributed in two different onset positions, and this may imply something in the phonological component. In speculating that the sonority of l is possibly higher than that of r, it can be inferred that such an alternation probably results from the rearrangement of the sonority contour in the reduplicative word (prosodic word). The pattern rooted in these three examples obviously doesn’t tally with what has been generalized from the instances in (14). In my opinion, they may indicate the occurrence of a minor pattern which was active in a limited area in a period from later Classical Chinese to Later Old Chinese; they may also represent an exceptional case for which I have not come to an explanation.

2.1.4. The fixed material *r- (> EMC l-) and *l- (> EMC j-, d-) in the second syllable

As shown above, the reduplicative forms under the progressive pattern exhibit a fixed liquid *r- (> EMC l-) or *l- (> EMC j-, d-) in the onset position of the second syllable. The reason why this kind of segment arises in this word formation process will be probed in Chapter Four below. At this point, our attention focuses on the alternation of these two segments.

In Old Chinese, *r- (> EMC l-) and *l- (> EMC j-, d-) are two distinctive phonemes, and many lexical items are distinguished from each other by means of these two segments. For example, in
the minimal pairs 旅 *rāγ? EMC liǎ ‘troop, journey’ and 与其 *lāγ? EMC jiǎ ‘associate with, together with’, the only difference between these two words is due to their different liquid onsets. The same holds the true in another minimal pair 旅 *rāγ EMC liǎ ‘hut’ and 与其 *lāγ EMC jiǎ ‘carriage’.

Nevertheless, these two distinctive phonemes seem to have been segments which are not underlyingly specified in the onset position of the second syllable in a progressive reduplication word. Instead, they are derivatives during progressive reduplication; whether *r- or *l- is eventually surfaced depends on what kind of phonological condition it meets. Here is the basic evidence for this hypothesis. As shown above, the segments in this position are either *r- (>EMC l-) or *l- (>EMC j-, d-); crucially, this alternation does not make any difference with respect to the general semantic implications of the progressive reduplication pattern. In other words, the alternation between *r- (>EMC l-) and *l- (>EMC j-, d-) at the onset position doesn’t seem to affect the formation of either diminutive or vivid reduplication at all. Here I repeat some examples listed above for the sake of convenient reference.

(17) a. tángláng 螳螂 *dāŋ rāŋ > EMC dāŋ laŋ ‘mantis’ *(Zhuangzi)
   b. fūyòu 蜉蝣 *bèw lèw > EMC buw juw, ‘mayfly, Ephemerida’, *(Shijing)
   c. xiāoyào 意遙 *sǎw láw > EMC siaw jiaaw, ‘free and unfettered’, *(Zhuangzi)
   d. kuàngláng 璧璃 *kʰwāŋ sāŋs rāŋs > EMC kʰwāŋʰ laŋʰ, ‘spacious and open on all sides’ *(Zhuangzi)

A comparison of (17a) and (17b) shows that, with respect to the semantic implication (SMALLNESS), it does not make any difference whether *r- (>EMC l-) or *l- (>EMC j-) is assigned in the second syllable position in a reduplicative word. The same holds true in the comparison between (17c) and (17d). Both forms share the general meaning VIVIDNESS, but the onset of the second syllable is occupied either by *r- or by *l-. On the other hand, from the point of view of a derivative process, this liquid onset is actually not a fixed segment already existing before the reduplication starts; instead, it results from the replacement of the original onset. Here, the original onset refers to the onset of the base syllable. Note that our basic opinion about reduplication is that the base form is always totally reduplicated at first and thus the onset of the second syllable during the first stage of progressive reduplication is identical to that of the base syllable.

35 Here, the original onset refers to the onset of the base syllable. Note that our basic opinion about reduplication is that the base form is always totally reduplicated at first and thus the onset of the second syllable during the first stage of progressive reduplication is identical to that of the base syllable.
through interaction between morphology and phonology during the reduplication process. This evidence and argument make it clear that the *r- and *l- which alternate in the onset position must be determined in accordance with particular phonological circumstances rather than by semantic implication. Moreover, since the transfer effect exists in the reduplication process (e.g. Steriade 1988), we are naturally motivated to look into what has been replaced by *r- (>EMC l-) and *l- (>EMC j-, d-) in order to understand why one is chosen rather than the other in a particular case. The result of the investigation in this line sheds no light on this matter because there is no clear-cut distinction between *r- (>EMC l-) and *l- (>EMC j-, d-) with respect to their correlates in the base. For instance, the voiced labial stop *b- in the base syllable corresponds to either *l- (2a, 6a) or *r- (2f, h) in the reduplicant syllable.

Given the fact that the alternation between *r- (>EMC l-) and *l- (>EMC j-, d-) is not determined by the nature of the consonants that they replace in the base, it could be inferred that the decisive factor for this alternation should exist in the phonological environment where *r- (>EMC l-) or *l- (>EMC j-, d-) are rooted. In other words, some of the properties of the second syllable are possibly responsible for the selection of *r- (>EMC l-) or *l- (>EMC j-, d-) and the alternation between *r- and *l- possibly reflects a case of allophonic variation. This assumption is reasonable since there are a number of cases where in a syllable the nature of the final has an obvious effect on the value of the initial. Japanese provides a example of what this effect might be. Modern Japanese has eight syllables, ra, ri, ru, re, ro, rj, rjtn, and rjo, which take liquid r- as their onsets. However, this liquid may be replaced by another liquid l- without any semantic or grammatical implication. The r-/l- distinction is entirely dependent on what follows. Based on Kawakami’s (1977) description, we can make such a rule as: r → l / -- [-high]. This case shows

36 See the discussion in Chapter Four below.

37 Kawakami’s (1977:51-2) description is as follows: [r] は[a, i, u, e, o]の前に付いて「ら、り、る、れ、ろ」を作り、[rj] は[a, u, o]の前に付いて「りゃ、りゅ、りょ」を作る。...人により場合によって[r]の代わりに[l]が用いられることがある。[l] はおもに[a, e, o]の前に付く。よく日本語には[l]が使われることがあるが、実は日本語には[l]がないのです。[l]と[r]の区別がないのである。「[r] is placed in front of [a, i, u, e, o] and (they) are formed as ら, り, る, れ, ろ. As for [rj], it comes before [a, u, o] and (they) are formed as りゃ, りゅ, りょ ... It is quite often that [l] is used instead of [r] in some situations by some people. [l] is usually used in front of [a, e, o]. It is said that [l] is not used in Japanese but actually it is not true that [l] doesn’t exist in Japanese. There is no distinction between [r] and [l].' This Japanese case
that the nature of the following segment can be the determinant in the r-/l- choice for the onset. It should be noted again that *r- and *l- in OC are two distinctive phonemes. However, these two phonemes are neutralized in the initial position of the second syllable of a progressive reduplication word. Thus it is similar to the r-/l- alternation in Japanese: whether *r- or *l- will be chosen is dependent on the phonological environment, that is, the segment which immediately follows the initial. Investigating the *r-/*l- alternation in the OC reduplication in line with this consideration has proved inconclusive suggesting that this is just a tendency. In other words, in most cases, if the syllable in a progressive reduplication word belongs to Type A, then the liquid realized in the onset of the second syllable will be *r-. By contrast, if the syllable in a progressive reduplication word belongs to Type B, then the liquid realized in the onset of the second syllable will be *l-. A pair of examples are shown in (18).

(18)  a. Type A syllables: kuàngláng 墙壘 *kʰwɑ̃ŋs rɑŋs > EMC kʰwɑŋ h lɑŋh, ‘spacious and open on all sides’ (Zhuangzi)
   b. Type B syllables: qiángyáng 强陽 *ɡàn lɑŋ > EMC ɡiɑŋ jiaŋ, ‘description of movement’ (Zhuangzi)

These two binoms are reduplicative words under the progressive pattern. But they differ with respect to their reduplicant onsets: *r- (> EMC 1-) in (18a) and *l- (> EMC j-) in (18b). Since the original onsets are both velars, the original velar onset could not be responsible for this *r-/*l- alternation. In looking into what follows, a clear distinction is revealed; that is, *r- goes with a Type A syllable, while *l- goes with a Type B syllable. This generalization has been applied to other cases and it is found that it works in most cases. Thus we are persuaded to assume there is agreement between the nature of *r- and Type A syllable and between the nature of *l- and Type B syllables. Nevertheless, we have to admit that there are quite a few cases in which this agreement between syllable type and specific consonant onset is not maintained. For instance, in the progressive reduplication word àidài 明天 *ʔets lēts (> EMC ʔeʃ h ʔeʃ ‘dim, obscure’ (Qu Yuan: Yuanyou)), the syllable belongs in Type A, but the liquid in the onset of the second syllable is *l- rather than *r-. Further study is needed.

indicates that if r- and l- are not underlyingly specified, which one is surfaced is possibly dependent on what kind of segment follows.
2.1.5. Phonological grounds for the progressive pattern

In order not to have so many things to attend to that the main argument cannot be advanced, the above discussion is designed to concentrate on the establishment of a pattern that depends on a basic assumption that the reconstructed phonetic values assigned to those binoms are reliable. As illustrated in Chapter One above, the OC reconstruction system adopted in this study can be considered reliable. However, the reconstructed sounds play a crucial part in our research, actually serving as the phonological foundation on which the patterns of reduplication are built. We must show strong evidence for these reconstructions. Under such circumstances, we are obliged to provide the evidence used to reconstruct the OC sounds which have been significantly applied to the examples of reduplication. Let us restrict our discussion to the reconstructed phonetic values significant to the establishment of diminutive and vivid reduplications. Since the present concern is just about the phonological component, on the whole I will treat both types of reduplication as the same kind of data and will not make any distinction with respect to semantic content.

As has been postulated above, the phonological requirements for progressive reduplication are twofold. First, the base and reduplicant share an identical final. Second, the onset position of the second syllable (reduplicant) is occupied by a liquid. The approach taken to judge the satisfaction of these two requirements is closely related to the understanding of reconstructed OC phonology.

Dealing with the first requirement is a relatively straightforward task. Since former scholars have already successfully classified almost all OC characters (syllables) into thirty-one rhyme groups, and the OC reconstruction I adopt fully reflects this widely-accepted classification, the recognition of an identical final for the two component parts, acquires a high degree of certainty. Taking tânglâng 螳螂 *dâŋ râŋ > EMC dâŋ laŋ ‘mantis’ as an example, in accordance with the reliable rhyme classification, both tâng 螳 *dâŋ > EMC dâŋ and lâng 螳 *râŋ > EMC laŋ are acknowledged as syllables belonging to the yâng 阳 rhyme group. As such, we are able to reconstruct just one final (*-âŋ) for both syllables. This identification can be achieved even with the reconstructions of other linguists since most scholars in the field of OC phonology also

38 In the case of the base syllable with liquid onset, modification on the second final is required. See the discussion in 2.1.3 above.
follow this canonical classification for OC rhymes. No matter whose reconstructed OC phonological system is used, we are bound to arrive at an identical reconstruction for the finals of the two syllables. 39

In comparison to the ease with which we can judge whether the first requirement has been satisfied or not, judging whether or not the second requirement has been fulfilled is difficult indeed. This is because the OC initial reconstruction presents many more difficulties. In reconstructing the OC finals, there are both rhyming categories and xiēshēng series that we can utilize. In reconstructing the OC initials, we basically can only use the xiēshēng series to draw evidence. The judgement of whether there is a liquid initial or not, then, becomes a complicated process which is in many ways constrained. I will refer to some typical examples below.

In (2b) above, we postulate a liquid initial *r- for láng 蝗, the second syllable in the reduplicative word tângláng 螳螂 *dâŋ râŋ > EMC dâŋ lâŋ ‘mantis’. The evidence for this initial reconstruction can be summarized as follows: 1) láng 蝗 and other characters (syllables) with liáng 良 as their phonetic, such as liáng 粮 ‘solid food (prepared for a journey)’, liáng 亜 ‘good’, láng 狼 ‘wolf’, láng 郎 ‘place name’, láng 腹 ‘side building’, láng 朗 ‘bright’, láng 浪 ‘wave, billow’, all develop into syllables with the onset l- in both Middle Chinese and modern Chinese. From this we may infer that its origin in OC is most likely also a liquid. 2) Evidence from ancient transcription and cognate languages suggests that the phoneme which later changed to l- in Middle Chinese corresponds to the r- sound (cf., Pulleyblank 1962). 3) According to the Shuowen, liáng 良 (láng 蝗’s phonetic) takes wâng 亡 *m- > EMC m- as phonetic, but its ancestral form found in the Oracle-Bone Inscriptions is just a pictographic character without any phonetic (e.g., see Xu 1988:608-9). There is no xiēshēng evidence to assign a consonant cluster in the onset position of liáng 良 as well as láng 蝗. Given these pieces of evidence, we may feel reasonably sure that the láng 蝗 takes *r (> EMC l-) as its initial in OC.

The consideration around láng 蝗 demonstrated just now does not represent an isolated case; actually it is possible to apply it to many other similar cases. Thus the hypothesis is that all cases of MC l- initial are likewise traced back to syllables which take *r- as their initial in OC. It should be noted that in some cases there is xiēshēng evidence suggesting an original cluster, *Cl- or *Cr-. As we expected, among the progressive reduplication words shown above, there are

39 Yakhontov (1960), Starostin (1989), and Baxter (1992) do not accept the 31 rhyme categories. Baxter (1992) has divided the traditional rhyme groups into different categories. As for tâng 螳 and láng 蝗, however, he assigns *aŋ for both, which is basically in line with the reconstruction offered by others.
many cases where the second syllable (characters) come from this category. Given their similar background, it is tenable to reconstruct the liquid *r- > EMC 1- as their onset. This phonetic value perfectly satisfies the second requirement for the progressive reduplicative pattern.

In our investigation into the binoms which possibly derive from progressive reduplication, it is found that many binoms do not have *r- > EMC 1- in the onset position of their second characters (syllables); they have instead the lateral liquid onset *l- in the second syllable. Since this segment generally has changed to other kinds of segments in later stages of the language, how we actually reconstruct it is worth paying more attention to. From the point of view of EMC, these syllables frequently begin with initials such as EMC j- and d- and the character itself also usually has xiéshēng derivatives in EMC initials such as j-, d-, t', tr', s-, and p-.

Observe the examples below.

(19) a. yang 阳 EMC jian jian 'a description of movement'; the xiéshēng series: yang 易 EMC jian, yang 揚 EMC jian, dàng 磭 EMC daŋʰ, chang 腔 EMC dianj ...

b. die 死 EMC dep as in yedié 殭殭 EMC ?iap dep 'a description of slight illness'; the xiéshēng series: ye 葉 EMC jiap, die 蛻 EMC dep ...

c. yi 芸 EMC ji' as in foyi 芸蒿 EMC buw ji' 'a plantain, Plantago major'; the xiéshēng series: yi 台 EMC ji, yi 赉 EMC ji, tái 駘 EMC deŋ, shí 始 EMC ci'...

d. yu 喻 EMC juə as in xuyu 喻yu EMC xuə juə, 'kind and beautiful'; the xiéshēng series: yu 喻 EMC juə; yu 喻 EMC juə; yu 喻 EMC juə, also EMC dəw; tōu 數 EMC dəw; tōu 偷 EMC t'əw...

From these examples, it is clear that EMC j- and d- are quite prominent phonemes since they either serve as the onset in the candidates for reduplication or invariably appear in the same xiéshēng series. These examples were, of course, not collected randomly, and actually they show that the two EMC phonemes must have been very similar or even identical in early OC. Such a close relationship between EMC j- and EMC d- in OC has been recognized for a long time. Based on the xiéshēng connection and alternative pronunciations for just one character, Karlgren (1923) and Zeng Yunqian (1927) proposed that the Middle Chinese yusi 喻四 initial (EMC j-) be incorporated into the ding 定 initial (EMC d-) in OC. This valuable theory, however, appears to
be inadequate since it fails to account for the later development and separation in a convincing manner. Karlgren (1940, 1954, 1957) restored the yǔsī 喻四 initial (EMC j-) mostly as an unaspirated *d-, as opposed to his *d' (EMC d-), but sometimes as *z- or *g-. Xiéshēng evidence indicates that it is reasonable for Karlgren to take EMC j- back to several sources in OC; however, his reconstruction of *d vs. *d' is rejected since there is no distinction with respect to aspiration among OC voiced obstruents (Lu Zhiwei 1947, Li Rong 1956).

To solve this problem, we need a full investigation into the relevant xiéshēng series in order to produce new reconstructions with which to account for the xiéshēng connections and later developments. Pulleyblank (1962, 1991b) has made progress in achieving this goal. According to his studies, the coronal (including dental, supradental, and palatal) consonant initials are grouped together through xiéshēng connections (see Pulleyblank 1962:114-5 for examples). As a matter of fact, these initials fall into two separate xiéshēng series: one mainly including EMC j-, d-, tʰ-, z-, s-, dr- and the other one mainly including t-, tɕ-, tr-. In focusing on comparable elements in these two series, such as d-, tʰ-, and t-, we see that the EMC d- and tʰ- often show xiéshēng connections with EMC j-, while the unaspirated voiced stop EMC t- rarely occurs in this xiéshēng series. If we simply follow Karlgren in postulating an unaspirated *d- for EMC j-, such a distribution becomes difficult to understand. In other words, the strong similarity between t- and tʰ- or d- doesn’t allow such an asymmetry with regard to their behaviors in xiéshēng connections. In light of the fact that tʰ- and d- could have xiéshēng connections with the consonant initial EMC j- (Karlgren’s *d-), the same should also be possible with t-. However, the fact that there is not a strong case for such a connection indicates that the t- must be totally different from the so-called d- and tʰ- and the consonant which later developed into EMC j-.

Since it is reasonable to assume that t-, as an unmarked segment, already existed in OC⁴⁰, we can reconstruct new OC forms for EMC j-, d-, and tʰ-, which could not be dental stops.

As postulated in Pulleyblank (1962, 1991b), the key to this reconstruction is to find the original value of EMC j-. This OC initial is most likely the lateral liquid *l-. In Han (206 BC - 220 AD) transcriptions, characters with EMC j- are frequently employed to represent the foreign l-. The same correspondence holds true with Chinese loan words found in other languages and in the comparison of Chinese with cognate languages such as Tibetan. Besides, that the alternative forms of characters with EMC j- could have *r- > EMC l- suggests that this consonant should be

⁴⁰ *t- also serves as coda in OC. This is another reason why we view t- as an independent initial consonant.
a consonant similar to *\( r^- \), possibly the liquid \( l^- \). Taking (19a) as an example, the possible reduplicative word qiángyáng 強陽 EMC gian jian ‘a description of movement’ from the Zhuangzi is written as qiángliáng 強粱 EMC gian lian in the Zhuangzi and Laozi. That yáng 阳 EMC jian is replaced with láng 梁 *\( r^- > EMC lian \) indicates the similarity of these two syllables with respect to their initials (they share the same final). Thus, it can be seen that the initial of yáng 阳 EMC jian in OC must be close to *\( r^- \) EMC li-. Based on this evidence, we may feel reasonably sure that EMC initial j- reflects an *\( l^- \) in OC (EMC j- also has other origins in OC).41

The successful OC reconstruction for EMC j- makes it easier to deal with the OC reconstruction of EMC d-. Pulleyblank (1991b) has proposed that EMC j- and d-, which are connected to each other in xiéshēng series, are two derivatives of one OC source; that is, the OC initial *\( l^- \). There are at least three types of evidence which support this hypothesis.

First, as mentioned above, there are numerous cases of the xiéshēng connection and the variant pronunciation connection between EMC j- and d-. As their affinity is irrefutable, they are possibly the same phoneme. Second, in these xiéshēng series, EMC j- and d- are in complementary distribution: EMC j- always comes in front of high vowels in EMC or finals with a grave prosodic feature in OC; EMC d- always comes in front of finals without high vowels in EMC or finals with an acute prosodic feature in OC. Third, assuming that EMC j- and d- come from a common source, their later development (*\( l^- > EMC d^- \); EMC j-) can be theoretically accounted for. In terms of distinctive feature, l and d share many values for important feature-elements, such as [+consonantal], [-nasal], [+voiced], and they both are coronal. Such a similarity suggests the potential for interchange between them. As shown in (20) below, in Mulao language, a Zhuang-Dong (壯侗) language in Luocheng, Guangxi, the preglottalized dental stop *\( d^- \) is in the midst of undergoing the change to lateral l-.

(20) The change of *\( d^- \) to l- in Mulao (Ma et al. 1991: 811)

<table>
<thead>
<tr>
<th>old generation</th>
<th>young generation</th>
<th>glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \ddagger )dam</td>
<td>lam1</td>
<td>‘pond’</td>
</tr>
</tbody>
</table>

41 The first choice made in Pulleyblank (1962) was *\( \delta = \text{IPA } \delta \). Later he chose *\( l^- \) because of the Sino-Tibetan cognates and the Han transcriptions.
shows a case in which a development of d- to l- is attested. In contrast with the Chinese case where OC *l- become EMC d-, the development in Mulao exhibits a change from d- to l-. Despite this difference in direction, this evidence shows that interchangeability is central to the nature of the relationship between l and d. As for the change of *l- to EMC j-, we can take a French case as supporting evidence to confirm the possibility. In ancient French, there was a palatalized l (l mouillé), which later developed into j-. This change can be recognized by comparing the spelling and modern pronunciation in some words such as fille [fiːj] ‘female’, bouillon [buˈjɔ] ‘broth’, and tailler [taˈje] ‘tailor’.

To sum up, it is tenable to restore both EMC j- and EMC d- as *l- in OC. Thus, we may establish the following rule in the historical development of the Chinese language: *l- → EMC d- /- ŋC (Type A syllable); EMC j- /- ɔC (Type B syllable). As for EMC ŋh-, which has a xiéshēng connection with EMC j- and d-, Pulleyblank (1991b) has assigned to it the voiceless lateral ŋ-. This assignment is partially based on the analogy of the reconstruction of the counterpart d-. With these reconstructions, it becomes understandable why EMC j- (<*l-), EMC d- (<*l-), and EMC ŋh- (<*ŋ-) all share xiéshēng connections, despite not being connected in the same way with EMC t- (<*t-). In a word, the *l- is a tenable reconstruction in that it maximally satisfies various kinds of evidence available at the present time.

This long argument has shown much evidence in favour of reconstructing the syllables with EMC initials l-, j- and d- as *l- in OC. The verification of such reconstructions is significant since the establishment of the OC progressive reduplication pattern is very dependent on these reconstructed values; thus we can be more sure about the progressive reduplication form that we have been dealing with. In these examples, such as wēiyí 委蛇 *wâl laĭ > EMC ?wia jia (7b) and xīyi 蜥易 *sâk¹ lâk¹ > EMC sejk jiajk (6i), the second characters (syllables) all have EMC j- as their onset. At the same time, they also have the xiéshēng connection with EMC d- and ŋh-. In line with the arguments just made above, we have every reason to believe that the liquid *l- is the proper reconstruction for these syllables. Ideally, this
reconstructed phonetic value is just what the progressive reduplication pattern requires for the onset of the second syllable.

Furthermore, syllables with the EMC initial d-, which have xiéshēng connections with EMC j- and tʰ-, should also be traced back to OC *l-; thus, it becomes possible to recognize that some binoms stem from the progressive reduplication pattern. Examples are given in (21) below.

(21)  a. yāotiāo 窺窺 *liáwʔ⁴² liáwʔ > EMC ?ew' daw', 'reticent, modest' (Shijing)
    b. háotáo 赫桃 *gaw láw > EMC yaw daw, 'description of crying' (Yijing)
    c. qúchú 簡除 *gāy láy > EMC gía dría, 'description of a kind of disabled person' (Shijing)
    d. àidài 暖怠 *dáts lāts > EMC ?ejʰ dejʰ, 'dim, obscure' (Qu Yuan 屈原: Yuanyou 远遊)
    e. huótuó 活蓆 *wat lwát > EMC ywat dwat, 'bush or small arbor' (Erya)
    f. hánàn 沽淡 *gámʔ lámʔ > EMC yám' dam', 'full' (Yang Xiong 揚雄: Ganquanfu 甘泉賦)
    g. cǐchí 差池 *tsral lral > EMC tsʰlia dría, 'uneven, not uniform' (Shijing)

In considering the second characters (syllables) of these binoms, it is found that their phonetics zhào zhào, dái dái, dui dui, yán yán and yē yē are all extensively used in many form-sound characters (xíngshēngzi 形聲字). With regard to their initial consonants, these characters (syllables) vary greatly in the range of stops to approximants such as EMC j-, d-, tʰ-, dr-, s-, ǝ-.⁴³

Significantly, there is not any EMC t- involved in these xiéshēng series. Therefore, in line with the arguments made above, it is safe to reconstruct this EMC d- as OC *l-. Again, this *l- (>EMC d-) ideally satisfies the requirement for the liquid in the onset position of the second syllable in the formation of the progressive pattern.

This section has stressed the OC reconstruction with respect to some particular syllable constituents. The discussion reveals that the reconstructed phonetic values successfully shape a

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⁴² Whether yāo 窺 should be classified as in the xiāo rhyme group (*-aw) or in yǒu rhyme group (*-əw) is still at issue (see He Jiuying and Chen Fuhua 1984:212).

⁴³ A couple of cases of EMC ts-, tsʰ-, and tr- are also found in these xiéshēng series.
solid phonological ground on which the progressive pattern, covering the diminutive and vivid reduplications, is established.

2.1.6. Phonological alternations of the progressive pattern

In the above discussion, a great deal of the source material quoted consistently shows identical phonological characteristics, in particular, always a pure liquid *r- (>EMC l-) or *l- (>EMC j- and d-) in the onset position of the second syllable (character). While we recognize this as the dominant case for this reduplication pattern, simultaneously, we also find that there are some source materials which apparently deviate from the main stream presented above. As will be seen below, many of the so-called apparently-idiosyncratic examples actually reflect either some conventional phonologically conditioned alternations or some philologically grounded discrepancies. On the other hand, in considering the fact that the source data collected in this study come from a vast area, including many different states, and cover a long time span of some one thousand years, it is reasonable to regard at least some of these cases as the result of dialects or vestiges of morphemic processes in the earlier stage of the language. Besides the variants of the dominant pattern, other linguistic processes or some minor patterns are also possibly responsible for some of the cases. Needless to say, there are some questions to which no answer can be given at present, but I will try to clarify what those questions are and possibly make some suggestions.

2.1.6.1. Nasals as the onset of the second syllable

As has been repeatedly pointed out, a prominent feature of the progressive reduplication pattern is that the onset position of the second syllable is generally occupied by a liquid *l- or *r-, as in all examples demonstrated so far. Nevertheless, there are cases in which nasal *n- (>EMC n-, n-), *m- (>EMC m-), and *ŋ (EMC ŋ-), rather than a liquid, appears in that position. I shall first discuss the case with *n-.

(22) a. mèngróng 蒙茸 *mánŋ nánŋ > EMC məwŋ ɲuawŋ, ‘description of disorder’,

(Shijing)
b. yín̕nuò 猗菫 *ʔalʔ nálʔ > EMC ʔiŋʔ na’, ‘soft and graceful’ (Shijing; written as ʔnu̯ō
哀菫 *ʔalʔ nálʔ in Hanshi waizhuan; ʔnu̯ō 婁娜 in Cao Zhi 曹植: Luoshen fu 洛神賦)
c. jùrú 淹洳 *tsâyt sâys > EMC tsíʔ jíʔh, ‘moist, damp, (Shijing)
d. hénrén 鐒錐 *tr̕həmʔ nêmʔ > EMC tr̕himʔ jímʔ ‘slow and unhurried’ (Wáng Bāo
王褒: Dongxiao fu 通繹賦)
e. zhûrû 朱儒 *tâʔ nàʔ > EMC tçuâʔ jûa ‘dwarf; midget; pygmy; kind of short post
in the framework of a house’ (Zuozhuan; Yang Xiong 揚雄: Taixuan 太玄; written
as 侏儒 in the Guoyu, Liji, and Xunzi)44
f. dînî 廁蓖 *tójʔ nêjʔ > EMC tējʔ nêjʔ, ‘kind of grass’ (Erya)
g. dîngnîng 失霽 *tânʔ nàŋʔ > EMC tənʔ nêŋ’ ‘kind of poisonous grass’
(Shanhaijing)
h. yâorâo 萊縂 *ʔjâwʔ njâwʔ > EMC ʔjiaw’ niaw’ ‘the root of the marrow leaved
polygala’(Erya)

Judging from the semantic component, the binoms in (22) are possibly all products of a
progressive reduplication pattern since they all have either diminutive connotations or the
meaning of vividness. The phonological component basically supports this assumption except
the discrepancy that an *n-, instead of *l- or *r-, is in the onset position of the second syllable. It
should be first noted that it is a fact that *n- can serve as the onset of the second syllable in a
progressive reduplication word. This represents a minor pattern under progressive reduplication
(see the discussion in 2.1.7 below).

Simultaneously, there is some evidence which indicates that the onset *n- in some of
progressive reduplication words (not all of them) in (22) is possibly the variant of the liquid
initial of those progressive reduplication words seen in (2), (6), (7), and (11) above. As has been

44 The Zuozhuan Xiang 4: 贊絳救鬳侵鬳，敗於狐魋，……國人譚之曰：……我君小子，朱僃是使，
朱僃朱僃，使我敗於鬳 Zang He succoured Zeng, and made an incursion into Zhu, when he was defeated at
Hutai. The people of Song ... sang these lines on the occasion: "...Our ruler a child; Our gentle a dwarf. O dwarf,
O dwarf, You caused our defeat in Zhu!!’’ (Legge 1865; Legge’s Romanization converted to Pinyin.) Du Yu’s (222-
284) commentary says, 贊絳短小，故曰朱僃 Zang He is short, and therefore they called him ‘dwarf'.
well documented (e.g., Beijing 1989a), the initials 1- and n- are actually two allophones of one phoneme in vast areas along the Changjiang River. For instance, in Wuhan and Chengdu (Xi’an Mandarin), words with the initial n- may be realized as words with 1- or ǐ without any semantic changes; in Hefei and Yangzhou (Jianghuai Mandarin), 1- may be pronounced as n-; in Changsha (Xiang dialect), n- and ǐ are allophones of the phoneme 1-; in Nanchang (Gan dialect), the phoneme 1- takes n- as its variant. More significantly, even in modern dialects in which n- is clearly distinguished from 1-, the two phonemes may be still interchangeable especially in the onset position of the second syllable of a disyllabic word (note that this interchange takes place in a condition similar to that in which the initial *n- in question arises). For instance, Shunping Mandarin makes a sharp distinction between 1- and n-. But when these two phonemes are located in the onset position of the second syllable in a colloquial disyllabic word, the n- and 1- can be interchanged, as seen in (23) below.

(23) Interchange of n- and 1- in Shunping Mandarin:

<table>
<thead>
<tr>
<th>Standard Mandarin</th>
<th>Shunping Mandarin</th>
<th>Glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>背梁 tɕi₃5 lianŋ₃5</td>
<td>tɕi₅₁ nianŋ₀</td>
<td>‘back (of human body)’</td>
</tr>
<tr>
<td>胡弄 xu₅₁ nunŋ₀</td>
<td>xu₅₁ lerŋ₀ / xu₅₁ nernŋ₀</td>
<td>‘act in a perfunctory manner’</td>
</tr>
</tbody>
</table>

In (23a), 1- is changed to n-, though l- remains unchanged in lianŋ₃5 tsǐ 梁子 ‘ridge of soil built in brooks, dam’. In (23b), the onset of the second syllable can be pronounced as 1-, though this n- is never changed to 1- when 弄 is used independently, e.g., tʰa₅₅ pa₂₂₃ ji₅₅ fu, nėŋ₅₁ tsanŋ₅₅ liɛ₀. 他把衣服弄髒了 ‘He got his clothes dirty’.

The fact demonstrated here makes it clear that the alternation between 1- and n- is quite a common phenomenon in modern dialects, not only in dialects where n- and 1- are two free variants of one phoneme, but also in dialects where n- and 1- are two distinctive phonemes. This

45 lianŋ₃5 梁子 itself has this meaning as early as in the Shijing time.
46 I at first speculated that xu₅₁ nunŋ₀ 胡弄 was possibly a fission reduplication (see Chapter Three below) word which derives from the base form hong 槓 ‘fool, humbug’. But their tone values are not in accordance with each other. On the other hand, this compound seems to make good sense by combining the two component parts. In any event, even though this speculation might turn out to be true, it is still suitable to treat this case as evidence supporting my argument since the onset of the second syllable in Shunping Mandarin is either n- or l-; subsequently it is always safe to say that one such change must occur, that is, from n- to l- and from l- to n-.
phenomenon, of course, cannot be accounted for by claiming coincidence. Instead, there is a root cause which is responsible for such an alternation; that is, the segments l- and n- are so similar to each other in terms of distinctive features, that the interchange between them arises very easily. This empirical account and theoretical consideration makes it believable that n- and l- are possibly interchangeable in certain contexts, no matter whether the language phonemically distinguished them or not. As far as OC is concerned, *n- and *l- are undoubtedly two distinctive phonemes, yet based on what has been found in Shunping Mandarin, we are really not sure that the *n- and *l- could always be distinguished. On the other hand, we find that some important writers such as Sima Xiangru 司馬相如 (179(?)-118 BC), Wang Bao 王褒 (?-before 50 BC), Yang Xiong 揚雄 (53 BC-18 AD), and Wang Yanshou 王延壽 (?- after 177), were from the areas where n- and l- are now two variants of one phoneme; thus we are not sure they could always distinguish these two phonemes. Based on this consideration, we may suspect that the n-onset in some of the disyllabic forms (not all of them) is actually a variant of *l- or *r-.

This hypothesis can also be supported on philological grounds. In OC texts, there is a case, in which one reduplicative word has two variants that alternatively have *n- or *l- (or *r-) in the onset position of the second syllable. For instance, as shown in (2b), ‘mantis’ is denoted by tângláng 螳螂 *dâŋ râŋ > EMC dâŋ lâŋ as in the Zhuangzi, but the same word is recognized as dângnáng 螳螂 *tâŋ nán > EMC tâŋ naŋ in the Erya; in Yang Xiong’s Ganquan fu, the binom fèngròng 豐融 *p^hôŋ lôŋ > EMC p^hûŋ jûwŋ is employed to describe flourishing things while the same word is recorded as fèngròng 卯茸 *p^hâŋ tâŋ > EMC p^huâŋ tâwŋ in Sima Xiangru’s Changmen fu. In the first pair, the initials *r- (> EMC l-) and *n- are alternated; in the second pair, the initials *l- (> EMC r-) and *n- are alternated. This kind of philological evidence bears out the hypothesis that the initials *l- (or *r-) and *n- were sometimes alternated in OC, just as in

Both Sima Xiangru and Yang Xiong are natives of Chengdu 成都, now still known as Chengdu, Sichuan. Wang Bao is a native of Zizhong 資中, now still known as Zizhong, Sichuan. Wang Yanshou is a native of Yicheng 宜城, now still known as Yicheng, Hubei. In the Jingdianshiwen, Lu Deming gives a fanqie of xīxiàng 息詳 for náng 螂, but the fanqie for náng 螂 in Zilin (compiled by a Jin (265-420) scholar Lù Zhen) is nâláng 乃郞 (quoted in the Jingdianshiwen) and in Guangyun it is núdâng 奴當.

The finals of fèngròng 豐融 *p^hôŋ lôŋ and fèngròng 卯茸 *p^hâŋ tâŋ are different, yet quite similar to each other. It is just this similarity that results in their merging as early as the period of Early Mandarin (Pulleyblank 1991c). It is suitable to treat them as two variants of a single word.
Shunping Mandarin (see (23) above). It is also possible to say that a non-standard dialect is implicated in this alternation; that is, in this OC dialect, *n- and *l- (or *r-) are two variants of one phoneme. As far as the examples in (22) are concerned, it can be said that some of them, though perhaps not all of them, reflect the alternation between *n- and *l- (or *r-) in the second syllable. They should likewise be incorporated into the progressive pattern as formulated in (5) above. Of course, it is also true that *n- in some of these binoms is just what it seems. I shall consider this kind of binoms in association with the binoms where other nasal onsets appear in the second syllable.

Let us review a group of binomes in which the nasal onset *m- (>EMC m-) or *η- (EMC η-) appears in the second syllable of binoms as shown in (24).

(24) a. zhîmò 鍾舘 *tèk mók > EMC têik mók, ‘bat’ (Fangyan)
    b. kòumáò 恁幂 *kʰâŋ máŋ > EMC kʰaw³ mëw³, ‘fool’, (Chuci)
    c. suîmî 鍾糜 *swâlʔ màlʔ > EMC swiâ’ miâ’, ‘description of soft grass’, (Liu’an 劉安: Zhaoyinshi 招隱士)
    d. juëwû 嶎魷 *gwët mèt > EMC gut mut, ‘towering’, (Wang Yanshou 王延壽: Lulingguangdianfu 魯靈光殿賦)
    e. hôngmèn鴻蒙 *gâŋ máŋ > EMC ṣâwô mëwô, ‘Chaos’ (Zhuangzi)
    f. zhúyû 雞鷈 *tôkʰâŋ > EMC tóawk ṣôawk, ‘kind of aquatic bird (Shiji)
    g. pôwô 駱蛾 *pʰâlʔ màlʔ > EMC pʰa’ ṣâ’, ‘description of horse’s shaking its head’, (Shiji)
    h. jiâoyâo 僬僬 *tsâw ṣiâw > EMC tsiaw ṣëw, ‘a pygmy country (in legend)’ (Guoyu)

Having gone over all these data in (24), we may instantly get an impression that these examples are quite possibly derivatives of progressive reduplication. From a semantic point of view, they either signal SMALLNESS (e.g., 24a,h) or VIVIDNESS (e.g., 24c,d). From a phonological point of view, both syllables in each binom share the final, and the onset of the second syllable consistently is a nasal, either *m- or *η-. That *m- or *η- consistently arises in a certain position indicates it is a derivative; thus we can see that these examples, as well as some examples with *n- in (22), reflect a case of progressive reduplication. As we have probably perceived, the
difference in the pattern given in (22) and (24) in comparison with the pattern illustrated in (5) and (15) is that the former has a liquid onset in the second syllable while the latter has a nasal onset. As a whole, we have to admit that these binoms reflect an outstanding case of progressive reduplication since we have a group of data which is internally consistent. However, some of the progressive reduplication words with *m- in the second syllable are possibly accounted for in the following way.

Let us take hóngméng 鴻蒙 (24h) and juéwù 崙嵎 (24f) as examples. These two forms share an identical consonant onset skeleton *g-m- (the dash “-” stands for a rhyme), which is probably semantically specified in the underlying level. In hóngméng 鴻蒙 (24h) the final áŋ appears in both syllables; in juéwù 崙嵎 (24f), the final êt appears in both syllables. The final may serve as a semantic determiner, specifying a more concrete meaning. This case is similar to what has been found in some Arabic words, in which a consonant root such as ktb ‘write’ determines the basic meaning while the inserted vowels further signal other meanings (McCarthy and Prince 1990).

2.1.6.2. Progressive reduplication with reduplicant onset *?-?

The examples in (25) below exhibits a group of binoms which have a glottal stop *?- (>EMC ?-) in the onset position of the second syllable.

(25)  a. bóyuē 祉約 *brákw ?ják > EMC baíwk ?iak, ‘meteor’ (Erya)
     b. chīhuō 尺蠖 *tâk ?wák > EMC teíajk ?wak, ‘inchworm’ (Yijing)
     c. fányuān 福縝 *brâ ?wán > EMC buán ?uan, ‘sock’ (Fangyan)
     d. fūyū 蟲虅 *bây ?ây > EMC buâ ?uâ, ‘common house centipede’ (Fangyan)
     e. chuóyuē 紹約 *tâkw ?ják > EMC teíajk ?iak, ‘(of a girl) graceful’ (Sima Xiangru: Shanglin fu)
     g. pânwán 蟒蜲 *bân ?wán > EMC ban ?wan, ‘description of dragon’ (Zhang Heng: Dongjing fu)
The examples listed in (25) denote either SMALLNESS or VIVIDNESS. In considering their phonological properties, it is recognized that the two component parts in each binom share the final, and the glottal stop *?- always appears in the second syllable. All these morphological and phonological properties, when compared with what we find in OC progressive reduplication, strongly suggest that these binoms are derivatives of progressive reduplication, and, of course, the salient problem that remains is how to account for the occurrence of *?-.

It is quite common for the glottal stop to serve as a reduplication onset in many languages. As quoted in Alderete et al. (1999), Tubatulabal and Nancowry are full of reduplication instances of this kind. In (26) a couple of them are given.

(26) a. reduplication in Tubatulabal
    pi:ñin
    toha

(26) b. reduplication in Nancowry
    cu:t
    miar\n
These examples show that the reduplicants present the glottal stop ?- in the initial position without exception. Since this fixed ?- initial is not in correspondence with anything in the base, it is naturally inferred that the ?- initial is epenthetic. To account for why the glottal stop, rather than other segments, is chosen as the epenthetic element, Alderete et al. (1999) develop an argument in an Optimality Theory framework. In accordance with their argument, the glottal stop serves as the fixed initial consonant in the reduplicant because it is the default onset of the two languages and many others. Furthermore, the glottal stop is the default onset because it better satisfies some hierarchy of markedness constraints H(?) than any other onset.

This reasoning may also be applicable to the OC case in question. As argued in Pulleyblank (1996), the glottal stop could also be the default onset in OC – whenever the onset position is empty, the glottal stop will automatically fill in. Given this consideration, the fixed initial *?- in
(25) is apparently suitable to be treated as an epenthetic value since the syllable needs something as an onset, the least marked (default) onset *ʔ- emerges automatically. This explanation is acceptable. Nevertheless, if we associate this case with progressive reduplication with a liquid onset which predominantly runs through the whole OC period and even down to modern dialects, we possibly still cannot stop questioning why the liquid doesn’t emerge at the reduplicant onset position. In particular, we know that the pattern conventionally needs a segment with high sonority rather than a segment such as ʔ with low perceptual salience. In the case of no convincing explanation, we have to admit that the forms seen in (25) represent a minor progressive reduplication pattern.

2.1.6.3. Progressive reduplication with reduplicant onset *x-

Let us review a group of data, seen in (27).

(27) a. chuánghuāng 倉兄 *tsʰāŋ xwāŋ (or: xwāŋ) > EMC tsʰiaŋh xuan’h (or: xuan’h), ‘sorrowful’ (Shijing; chuánghuāng is a special reading in this poem – otherwise would be cāngxiōng)

b. bànhuān 伴奂 *bǎn xwán > EMC ban’h xwan’h, ‘beautiful’ (Shijing)

c. bixīè 棋射 *bǐ xāt > EMC bi’h xi’h, ‘description of giant’ (Zhang Heng: Xijing fū)

d. dīngxiāng 丁蛸 *tāŋ xāt > EMC tēn’h xeŋ’h, ‘dragonfly’ (Shuowen)

e. xīxi 悉栖 *yā j xā > EMC yej xej’, ‘kind of tree’ (Erya)

f. pàoxiāo 鮂操 *brō w xraw > EMC bāw xaw, ‘description of arrogance’ (Shijing)

g. pénɡxiānɡ 彭願 *brāŋ xrāŋ > EMC bāŋ xaiŋ, ‘description of arrogance’ (Maozhuan)

h. miěhuó 漱浊 *māt xʰát > EMC mat xwat, ‘blurred, indistinct’ (Shuowen)

In considering their semantic implications and the identical finals shared by the two component syllables, all examples listed in (27) are most likely to be products of progressive reduplication, just like the other examples discussed. Nevertheless, their consistent onset *x- may make us

50 Reference to Optimality Theory can be found in Chapter Five below.
hesitate to hold to this view since this segment is quite different from the sonorants, either liquid or nasal, which have been found in OC, and the glottal stop ?, which is found in both OC and other languages (cf., (26)). However, this doubt can be alleviated by recognizing a similar case in a modern Chinese dialect. In Cantonese Tengxian dialect, as reported in Deng Yurong (1995), many monosyllabic adjectives undergo a kind of progressive reduplication and this process results in reduplicative words, invariably presenting the glottal fricative h- as the reduplicant onset. Look at the examples in (28).

(28)  

a. tuo 駁 to231 ‘bent’ → to231 ho53 tʃɛŋ231

b. è 儾 ηok11 ‘stunned’ → ηok11 hok3 tʃɛŋ231

c. qiào 踢 k’iau53 ‘bending up’ → k’iau53 hiau53 tʃɛŋ231

d. zhòu 鋑 ηe231 ‘wrinkle’ → ηe231 he231 tʃɛŋ231

e. suō 細 juk5 ‘shrunk’ → juk5 huk5 tʃɛŋ231

f. má 麻 ma231 ‘numb’ → ma231 ha231 tʃɛŋ231

These examples are basically parallel to those OC examples in (27), except for the glottal fricative h- serving as the reduplicant onset. However, despite the fact that x- and h- are different segments, their distinctive feature is quite similar. Thus, the existence of this modern case can be considered evidence supporting the view that the binoms seen in (27) represent a case of progressive reduplication in OC.

2.1.6.4. Progressive reduplication with reduplicant onset cluster with *r-

As demonstrated above, one of the basic features which defines the progressive reduplication pattern is that in many cases a liquid serves as the reduplicant onset. Among the data collected

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51 tʃɛŋ231 is a suffix, meaning ‘description of’.

52 In terms of distinctive feature, x and h are the same except for the place feature; x goes with the dorsal feature while h with thiw pharyngeal. But these two places are adjacent.
that accords with this definition, there is another case in which an initial cluster with *r, rather than a liquid alone, appears at the position. (29) shows some examples.

(29)  

a. fūshū 扶疏 *bāy s(n)rāy > EMC bua sia, ‘(of branches and leaves) luxuriant’ (Hanfeizi)

b. qūshū 蹲疏 *gāy srāy > EMC gia sia, ‘kind of fungus’ (Erya)

c. xìngshēng 門盛 *grāŋ? srāŋ? > EMC wəiŋ giaŋ, ‘kind of bottle with ears’ (Guangya)

d. qiušōu 蝉蛻 *gōw srēw > EMC gūw ꜕w, ‘kind of worm’ (Guangya)

e. yuānzhūan 延繆 *wàn tsrwān > EMC wian tswian, ‘a kind of snake’, (Wang Yi 王逸: Jiusi 九思)

f. wōchuō 鳴聾 *wǎtk ts’ātk > EMC tσiwk tσiwk ‘unprincipled’.

In focusing on the EMC value of the reduplicant onset, it is found that the reduplicative words in (29) all have a retroflex. To trace the retroflex back to an OC origin, it is widely accepted that the OC liquid *r should be responsible for the occurrence of the EMC retroflex. 53 This is the reason why we postulate a liquid *r in the reduplicant onset position. Given the fact that in most cases a liquid appears in the reduplicant onset position in the progressive reduplication word, we might also expect such a liquid to appear in this position, but what is found in the onset position is a cluster with *r, rather than a single liquid. At present, there is no convincing way to account for the occurrence of the “extra” segments in that cluster, and I shall make a hypothesis by taking fūshū 扶疏 (29a) as an example.

Let us start with the reconstruction of the onset of shū 疏. Given the fact that shū 疏 has EMC s- as its onset, it is reasonable to reconstruct this onset in principle as *sr- in OC. Nevertheless, if we take its xiēshēng connection into account, the reconstruction may look more complicated. According to the graphic analysis given in Shuowen, shū’s 疏 phonetic is shū 正,

53 The OC *r is not the only source of EMC retroflex. See Pulleyblank (1962:128)
which, merely considering the onset, has two readings, EMC ʂ- and ȵ.-54 In order to account for these different descendants, the OC original source onset is possibly reconstructed as the cluster *srjr. On the other hand, since the xiéshēng connection with *ŋ certainly occurs at the time of the character creation and the *ŋ had probably disappeared earlier,55 we may put a bracket around this nasal velar to indicate its uncertain status in Classical Chinese. Thus, getting all other elements together, we can reconstruct the binom fūshū 扶疏 as *bāy ʂ(ŋ)ray. As far as the meaning is concerned, it is easily decided that the binom fūshū 扶疏 denotes an adjective as in the Hanfeizi.56

In OC, we also find a binom fūsū 扶蘇 *bāy sày, which is compatible with fūshū 扶疏 in both phonological and semantic implications. Fūsū 扶蘇 appears in the Shijing in the sense of a kind of small tree.57 This meaning seems to be related to the meaning of fūshū 扶疏 ‘(of branches and leaves) luxuriant’). In considering their phonological properties, it is found that the two forms, fūshū 扶疏 *bāy ʂ(ŋ)ray and fūsū 扶蘇 *bāy sày, differ mainly in respect to the onsets of the second syllables, *r appearing in fūshū 扶疏 but not in fūsū 扶蘇.58 This elusive issue can be understood in this way: as will be discussed on another occasion, fūsū 扶蘇 results from another type of reduplication to be named skeleton reduplication (duplicating a final in a fixed onset structure such as *b-s-, which is semantically specified).59 Since the progressive reduplication mostly occurs with a fixed onset *r or *l, this liquid eventually behaves like an

54 The graph 歷 is also used to represent pí 匹 (<Han> Baihutong). Since the pronunciations of the two characters are totally different and their graphic forms in the oracle bone inscriptions or bronze inscriptions are obviously different as well, it is possible that the two graphs have been mixed up with one another in the later stage. In terms of the small seal, the two graphs are quite similar to some extent (see Shuowen).

55 The evidence for this is that, among the characters with 歷 as the phonetic, more than thirty of them are realized with EMC ʂ- or s- and only one uncommon character is realized with EMC ň-. (cf., Shen Jianning et al 1944)

56 Hanfeizi yangquan: 韓非子揚權：為人君者，數損其木，毋使木枝扶疏 ‘As a people’s ruler, he should frequently cut off the branches and leaves of the tree and not make them luxuriant.’

57 Shijing 84: 山有扶蘇，隰有荷華. ‘On the mountain, there is fū-su, in the swamp there is the lotus. (Karlgren 1950:56) The West Han (206 BC-25 AD) scholar Mao Heng made a commentary saying, “扶蘇，扶背，小木也‘Fūsū, also called fūxū, refers to kind of small tree.’

58 Another difference exists in their suprasegmental features. But it doesn’t seem to play a part in this regard.

59 A similar opinion is found in Guo Xiaowu (1993) and Wang Hongjun (1994,1999).
In this condition, inserting a liquid *r properly into fūsū 扶蘇 actually amounts to changing skeleton reduplication to progressive reduplication, thereby producing a vivid reduplication word fūshū 扶疏.

In the other five binoms (29b-f), an initial cluster with *r is also found in the second syllable. Nevertheless, whether these cases are the same as fūshū 扶疏 or not is still at issue since we cannot find the correlative forms for them, as we have found for fūshū 扶疏.

2.1.7. Dominant pattern and minor patterns

I have presented an extensive description of OC progressive reduplication. From the point of view of the phonological component, this reduplication pattern can be defined in terms of identical finals and a fixed segment in the reduplicant onset position. As far as the morphological component is concerned, this reduplication pattern is employed to signal either SMALLNESS (diminutive) or VIVIDNESS.

As we have probably recognized in the above discussion, one inconsistency with respect to the phonological component of this pattern is that the fixed segments in the onset position of the second syllable can be characterized by diversity; these fixed segments can be enumerated as a list consisting of *r-, *l-, *n-, *m-, *η-, *ʔ-, *x-, *br-, *sr-, etc. If our interest is just focusing on a plain description of the source data, we may feel pleased with these discoveries. But if we are eager to uncover the details involved in this reduplication pattern, then, we cannot give up asking why there are so many distinct segments in that particular position.

Mainly based on the OC discoveries, as well as parallels attested in living languages, an investigation into these distinct segments has been preliminarily made and it is found that while the cases demonstrated above mostly reflect OC progressive reduplication, there is a distinction between dominant case and minor cases. Putting it simply, the forms with a liquid onset in the second syllable represent the dominant case of the progressive reduplication pattern. As for the forms with other fixed segments in the onset, except for some of them which are possibly incorporated into the dominant case, they represent some minor cases of progressive reduplication.

Pulleyblank (1973) proposes *r as an infix which denotes causative meaning. But this *r infix, so called for the time being, is, of course, different.

I have treated the two attested fixed liquids *r- and *l- as variants phonologically conditioned in this particular position though some details need to be worked out. See the discussion in 2.1.4 above.
reduplication. There are two basic reasons which allow us to hold the hypothesis of a dominant/minor distinction. First, among the data of progressive reduplication, cases with an onset liquid outnumber other cases. This is augmented in view of the following facts. As discussed above, there are quite a few progressive reduplication words which apparently have non-liquid segments in the onset of the second syllable, but this non-liquid onset in some of cases can be explained as variants of a liquid. For instance, dangnang 蟾蜍 *təŋ nəŋ and fengrong 丰茸 *pʰəŋʰ nəŋʰ appear to be progressive reduplication words with the onset *n-, but actually the onset *n- is possibly an alternative form of a liquid in that position (see 2.1.6.1 above). Besides, as we have mentioned above, some so-called progressive reduplication examples have possibly got other linguistic processes involved. As such, the total number of progressive reduplication examples would decrease. A case embracing more examples among the comparable cases indicates that it is most likely the dominant case.

Second, it is attested in quite a few modern Chinese dialects with reduplication patterns that a liquid can exclusively serve as the fixed onset (derivative) in the second syllable while there does not seem to be any other segment such as n-, m-, and br- that could do so. In standard Mandarin, reduplication is an active morphological process (e.g., Chao 1968, Zhu Dexi 1982a). Although most of the reduplication patterns employ alternations with respect to stress patterns, tone sandhi, and neutral tone to distinguish the reduplicant from the base, there is a kind of reduplication in which only the liquid l- is realized as a fixed segment. This reduplication is onomatopoeic reduplication. Zhu Dexi (1982b) presents an extensive description of onomatopoeic reduplication in standard Mandarin. According to his study, in onomatopoeia reduplication words consisting of two syllables under the progressive pattern, l- is the most active fixed onset in the second syllable. Examples are shown in (30) below.

(30)

a. pa la ‘sound of calculating on a abacus’
b. xua la ‘sound of flowing water’
c. pəŋ ləŋ ‘sound of a drum’
d. hu lu ‘sound of breathing deeply’
e. pu lu ‘sound of flapping wings’
f. kurj lurj ‘thunderclaps, sound of a train’
g.  tarj laŋ  ‘sound of colliding between metals’

Besides, as will be seen in Chapter Three below, a kind of reduplication called fission reduplication is attested in many modern Chinese dialects, Middle Chinese, and OC. In the words resulting from this reduplication pattern, the onset of the second syllable is almost always occupied by a liquid. That in so many cases a liquid is proven to be the most active fixed segment shows that the liquid is the most suitable candidate to serve as the fixed onset in reduplication words. Given the similarity in reduplicative patterns between diachronically disparate forms of the language, these attested cases support the proposal to treat the progressive reduplication pattern with the fixed onset liquid as the dominant pattern in OC.

If the above arguments are acceptable, then, we can see the dominant/minor distinction existing between progressive patterns with the onset liquid and minor progressive pattern with other consonants as the onset. With this distinction in mind, we may stress the dominant pattern to search the principle which generally determines how progressive reduplication runs (we will see such a discussion in Chapter Four). Nevertheless, we still cannot neglect the minor patterns, which are worth paying attention to. We may account for the minor patterns by claiming they are historical vestiges, dialectal variants, secondary developments, the products of other processes, or just minor patterns for which the details need to be worked out.

2.2. Retrogressive reduplication

Retrogressive reduplication is a type of reduplication that results in a reduplicative form in which the base always comes after the reduplicant. A typical example found in English is "crisscross", where the base “cross” comes after the reduplicant “criss”. This type of reduplication frequently occurs in OC, primarily consisting of repetitive reduplication and a kind of fixed-material reduplication.

2.2.1. Repetitive reduplication

Repetitive reduplication, typically involving a verb, is a common type of reduplication which is attested in many languages such as Dakota (Shaw 1980) and Vietnamese (Thompson 1965). However, that many languages naturally employ reduplication to signal the morphological
implication “repetition” doesn’t necessarily mean that they operate invariably in accordance with an identical phonological pattern. In fact, repetitive reduplications in different languages frequently present different phonological patterns. For the present purpose, we find that the operation of repetitive reduplication in OC primarily follows a kind of retrogressive pattern, in which the base always comes after the reduplicant. In particular, in this kind of reduplication, the initials of the reduplicant and the base always remain the same while the final of the first syllable (reduplicant) always undergoes a kind of regulated phonological modification. Furthermore, it is found that the feature configuration of the base syllable determines the method of this modification, thereby subdividing this kind of reduplication into two categories in accordance with whether the final of the base syllable has the distinctive feature [+round] or not (i.e., [-round]). Now I shall discuss these two categories respectively.

2.2.1.1. Repetitive reduplication with [+round] in the final of the base syllable

Based on present data, it is found that, if the base syllable’s final, counting all available segments including the “medial” , has a positive value for the feature [round], the reduplicant syllable’s final will then always have a negative value for the feature [round] in the corresponding position. The retrogressive reduplication pattern defined by the [-round]/[+round] distinction between reduplicant and base can be formulated as in (31) below, (σ: syllable; O: onset; R: rhyme)

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62 In terms of cognitive semantics, reduplicative construction is diagrammatically iconic, and, therefore, it seems quite natural that a device to duplicate a verb (i.e., reduplication) is employed to signal in a systematic way repetition of the objective activity (i.e., intensity) denoted by the verb.

63 OC repetitive reduplication also presents an unmodified (total) reduplication pattern which can be instantiated by xìngxìng 行行 ‘keep on walking’ as in Gushi shijiu shou in Wenxuan 29. But this pattern seems to have been established as late as in the late Han (LOC), and it doesn’t exist in Classical Chinese. The famous reduplicative form cāicāi 采采 * tsʰəʔ? tsʰəʔ? > EMC tsʰaj’ tsʰaj’ as in the Shijing actually does not derive from repetitive reduplication of the verb; rather, it denotes ‘(of flowers and plants) luxuriant, beautiful’, deriving from total reduplication. (cf., Ding Shengshu 1940) In Classical Chinese, we do find some total reduplication with regard to verb base such as bēn bēn 奔奔, yúyú 言言, chūchū 處處, and yáoyáo 搖搖 in the Shijing. However, all these forms emphasize a vivid impression of the activity rather than signal repetition.

64 A discussion about the status of this “medial” from the point of view of syllabicity will be given in Chapter Five below.
This diagram shows that base and reduplicant share the onset but the two rhymes differ with respect to the [-round]/[+round] feature distinction. Note that the two rhymes may be of the same OC rhyme category (see the table in Chapter One) while still having different rounding features.

Let us now look into concrete examples to confirm the pattern just illustrated. This kind of investigation proves quite difficult. We first have to face uncertainty to some extent with regard to the phonological values of the two syllables. Thus, it is necessary to briefly show evidence for the reconstructions I am following or what I, myself, came up with. Apart from this, a discussion with regard to the linguistic implications and the philological background of the component parts in those binoms is also required. In brief, what I am planning to show by illustration of the twelve examples below is as follows: 1) the two syllables differ only in respect to the correlative position of their rhymes; 2) the first syllable (reduplicant) is simply a derivative of this retrogressive reduplication and it itself (the monosyllabic word) is meaningless in comparison with the meaning of the retrogressive reduplication word; 3) the second syllable is the base whose meaning is, in a consistent way, related to the meaning of the retrogressive reduplication word.

[1] Zhānzhuān 轉 轉 *trān? trwān? > EMC trian’ trwian’ ‘toss and turn endlessly (in bed) (Shijing)

Judging from its semantic implication, a sense of iteration, zhānzhuān 轉 轉 looks very much like a reduplicative word since a meaning of this sort is typically expressed by a reduplicative form in many languages. An immediate constituent analysis supports this judgement in that there is only one constituent whose meaning, when standing by itself, nicely corresponds to the meaning of the binom. Let us look into zhān 轉 first. In OC zhān 轉 is a bound form and occurs only in this binominal expression. On the other hand, since zhān 轉 takes zhān 展 as its phonetic and in this binom it is originally written as zhān 展, it is also necessary to take zhān 展 into
account. Different from 轵, 轵 is a common form in OC, and its meanings are multifold (cf., HYDZD: 974). However, none of these meanings are related to the meaning of the binom. In contrast to 轵, the second part of 轵转 is a common word in OC. As a verb, it denotes ‘turn’ as in the Shijing 26 我心匪石，不可转也。‘My heart is not a stone and it cannot be turned.’ This meaning of 轵转 is parallel to the meaning of

65 Zhān 房 is defined as zhuān 转 ‘turn’ in Shuowen. But this definition is wrong. The Qing scholar Xu Hao 徐渭 made a critical comment on this saying, 《廣雅》曰：展，舒也。此乃展之本義。其訓為轉者，由《周南》“展轉”之文為説耳 The word ‘zhān 房 is explained as ‘unfold, display’ in the Guangya. This is the original meaning of zhān 房. Zhān 房 is interpreted as ‘turn’ [in Shuowen] because such a definition for zhān 房 is actually made on the basis of the meaning of zhānzhuan 轵转 in “zhounan” (name of one poem in the Shijing). One strong piece of evidence supporting this comment is that there is no text where zhān 房 is used in the sense claimed in Shuowen. In HYDZD, the compilers follow Shuowen and provide some examples regarding this definition. However, all these examples are problematic though we may not necessarily take them into account since they come from sources much later than the Shijing. Nevertheless, I shall discuss one example quoted in HYDZD. This example comes from Hongloumeng 19: 幸而襲人家不遠，不過一多半路程，展眼已到門前 ‘It is lucky that Xiren’s place is not far away, not farther than one half li. It was in the twinkling of an eye that [Baoyu and Mingyan] arrived at the door.’ At first sight, it seems right to think that zhānyǎn 展眼 equals to zhuānyǎn 轉眼 ‘in the twinkling of an eye’ because Chinese speakers frequently use both the expressions in the same sense. On the other hand, it seems reasonable to assume that zhuān 轉 is changed to zhān 房 by losing the rounding feature since this is a common phenomenon in Mandarin as in dui 隊 ‘team’ (standard Mandarin twei51 vs. Shunping Mandarin tei51), qu 去 ‘go’ (standard Mandarin tsi43 vs. Shunping Mandarin tsii43), and huan 喚 (standard Mandarin xwan43 vs. Tangshan Mandarin xan35). Given this, even if the sound tsan24, represented by the graph zhān 房 here, really meant ‘turn’, we still cannot speculate that the word zhān 房 in OC had the meaning ‘turn’. This argument, however, turns out to be incorrect. To our surprise, the expression zhānyǎn 展眼 originated from zhāyǎn 轉眼 ‘wink, twinkle’, a common expression which can be traced back to Song (960-1279), rather than zhuānyǎn 轉眼. According to Yu Min (1988), in the early half of this century, the common idiom shārén bù zhāyǎn 殺人不眨眼 ‘kill without batting an eyelid’ was articulated as sa51 zan35 pu51 tsan24 (cf., standard Mandarin pronunciation tsa24 for 轉) jan24 by professional storytellers in Beijing. Thus we can see that tsan24 jan24 actually derives from tsa24 jan24 through retrogressive assimilation. The process could be reconstructed as LMC tsa:’ rjan’ --> EC tsa’ jan’ – (retrogressive assimilation) --> modern Mandarin tsan24 jan24. In short, zhān 房 has never had the meaning ‘turn’ whether in OC, Middle Chinese, or Mandarin.

66 Bù kē zhuān ye不可轉 also is translated as ‘you cannot turn it’ in Karlgren (1950:15). This translation is not correct since the transitive verb preceded immediately by kē 可 ‘possible’ must be understood as passive. (see Pulleyblank 1995a)
zhānzhuan 轉轉 in the following ways: as a monosyllabic verb, zhuan 轉 indicates a kind of action (‘turn’); as a binom, zhānzhuan 轉轉 denotes the activity of ‘turning’ more frequently in quantity than the monosyllabic form zhuan 轉 ‘turn’. This semantic parallelism indicates that it is reasonable to hypothesize that zhānzhuan 轉轉 results from the reduplication of zhuan 轉 since it is attested in many languages that such a semantic parallelism commonly exists between a verbal base and its corresponding reduplicative form.

The nature of the phonological component of zhānzhuan 轉轉 is likewise in favor of this hypothesis. Both zhānzhuan 轉转 and zhuan 轉 are of the same rhyme group yuan 元 in OC and xian 獨 in EMC. Besides, they both share the initial tr- in EMC, and there is no reason that prevents us from postulating the same initial for both syllables in OC. As far as their difference is concerned, it is realized as a kaikou 開口 ‘open month’/hekou 合口 ‘closed mouth’ distinction, which was already recognized by ancient Chinese phonologists (see Yunjing: kai 開 23 and he 合 24). More convincingly, this distinction still extensively exists in modern dialects. As documented in Beijing (1989a), most of the twenty dialects studied still keep this distinction as seen in (32).

(32)

<table>
<thead>
<tr>
<th></th>
<th>Beijing (Mandarin)</th>
<th>Jinan (Mandarin)</th>
<th>Chengdu (Mandarin)</th>
<th>Wenzhou (Wu dialect)</th>
<th>Guangzhou (Cantonese)</th>
<th>Fuzhou (Min dialect)</th>
<th>Nancha-ng (Gan dialect)</th>
</tr>
</thead>
<tbody>
<tr>
<td>zhàn 轉转</td>
<td>tsan\textsubscript{214}</td>
<td>ts\textsubscript{a5}</td>
<td>tsan\textsubscript{53}</td>
<td>t\textsubscript{i45}</td>
<td>t\textsubscript{jin35}</td>
<td>t\textsubscript{en31}</td>
<td>ts\textsubscript{en213}</td>
</tr>
<tr>
<td>zhuan 轉</td>
<td>ts\textsubscript{wan214}</td>
<td>ts\textsubscript{wa55}</td>
<td>ts\textsubscript{wan53}</td>
<td>t\textsubscript{g45}</td>
<td>t\textsubscript{jyn35}</td>
<td>t\textsubscript{uon31}</td>
<td>ts\textsubscript{on213}</td>
</tr>
</tbody>
</table>

All of these support our OC reconstruction *tran? trwan? for zhānzhuan 轉轉. In particular, it is certain that zhàn 轉 and zhuan 轉 differ with respect to the [-round]/[+round] distinction. Nevertheless, if we apply the [-round]/[+round] distinction strictly, what is supposed to be found in the “medial” position in the first syllable zhàn 轉 should be the un-rounded glide ㆈ (the

\[67\] Karlgren define hekou 合口 as meaning the presence of a rounded medial, either vocalic u or consonant w, and kaikou 開口 as meaning the absence of such a medial.
counterpart of the rounded glide w), but the un-rounded glide u does not exist as “medial” in the OC. 68

To sum up, zhānzhuān 轉轉 is a reduplicative form which results from the retrogressive reduplication of the base zhuān 轉. Along with this process, the meaning of the monosyllabic verb is changed from “turn” to a meaning involving repetitive activity, i.e., “turn endlessly”; simultaneously, the positive value for [round] in the base syllable is changed to the negative value in its correlative part, i.e., the reduplicant zhān 轉. It is only these two outstanding characteristics, semantic and phonological, that, in principle, determine this retrogressive reduplication pattern.

[2] Qīānquān 継縷 *k'hàn? k'hvàn? > EMC k'hian’ k'huan’ ‘keep on chopping and changing; get tangled; deeply attached’ (Shijing, Zuozhuan)

Except for in this binom, qīān 綹, the first syllable, never occurs in other contexts in OC or even down to Middle Chinese. Moreover, even with recourse to phonetic and etymological analysis, it is still hard to assign any potential semantic feature to this form. 69 Given this, it is not reasonable to postulate qīān 綹 as the base. In contrast to qīān 綹, quān 緜 itself could mean something. In the Lingshujing 靈樞經, a medical work possibly completed in the Warring States (475-221 BC), it says, 膀胱之胞薄以膜, 酸則縷縷 “The urinary bladder is thin and soft; when it meets acid substances, it will roll up and shrink”. Quān 緜 in this context obviously means ‘roll up’. Phonetic and etymological analyses also support this proposal for the meaning of quān 緜. Look at the data in (33).

(33) Cognate words of quān 緜

juǎn 卷 EMC kwian’ ‘to roll’ (Shijing)
juǎn 眺 EMC kwian’h ‘to look back’ (Shijing)
quān 桌 EMC kwian ‘bowl made out of curving wood’ (Mengzi)

68 One may question why the OC *-j- actually does not appear in the first syllable. I shall discuss this issue in Chapter Four below.

69 The following three characters share the same phonetic with qīān 綹 and thus it may be possible to search for the potential meaning of qīān 綹 through them. However, no suitable semantic properties can be generalized. The three characters are: qīān 書 is used in the binom with shāng 商, which means ‘a small clod of earth’ (Shuowen); qīān 遭 may mean either ‘send’ (Shijing) or ‘let go’ (Zuozhuan); qīān 綹 means ‘reproach’ (Shijing).
The fact that all these cognate words share the identical semantic feature “roll up” confirms the reality of the fact that quán 縈 has this meaning. Consequently, in comparing this meaning with that of the binom, it is again found that the plain verbal meaning in quán 縎 is coloured with the sense of repetition in the binom. Thus, quán 縎 should be the base. Furthermore, since quán 縎 comes after qiān 縎, it leads us to a hypothesis that this is a retrogressive reduplication form. With regard to the phonological relationship, it is recognized that the two parts are distinguished from each other with respect to the [-round]/[+round] contrast, basically in accordance with the pattern illustrated in (31) above. In particular, *-j- is found in the first syllable and the *-w- in the second syllable. From the point of view of the retrogressive reduplication pattern, there must be a reason to account for why *-j- is realized in the reduplicant syllable as opposed to the *-w- of the base syllable. Strictly in keeping with the [-round]/[+round] distinction, what is supposed to be in the reduplicant medial position should be the back un-rounded glide ɰ, rather than the front glide *-j-. The reason for this seeming contradiction is that -ɰ- does not exist as a “medial” in the OC phonological system. Thus, *-j- becomes the best choice for serving as the correlate of -w- in keeping with the [-rounding]/[+round] distinction.

In Shijing 78, qingkong 碛控 is used to describe the activity of controlling a horse. The Western Han (206 BC-25 AD) scholar Mao Heng treated this binom as two independent forms and said, 驅馬曰磬,止馬曰控 ‘To make a horse to gallop is called qing; to stop a horse is

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[3] Qingkong 碛控 *kʰəŋjʰs kʰəŋh⟩s > EMC kʰɛʔjʰ kʰəwŋh⟩, ‘to control a horse in various ways’ (Shijing)

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70 In view of the application of qiānquán 縈縎 in the Shijing and the Zuozhuan, ancient commentators have made some explanations such as fānfu 反覆 ‘keep on chopping and changing’ (Western Han (206 BC-25 AD) scholar Mao Heng), bù lìsàn 不離散 ‘not separated and dispersed’ (or: ‘always live together’) (Du Yu 222-287), and lăogù xiāng zhù 牢固相著 ‘deeply attached’ (Kong Yingda 574-648). These meanings are not identical, but it is possible to generalize these meanings in the sense of ‘repetition’.

71 *-r- is another candidate for this choice. But, *-r- has many more different features involved than *-j- has compared with *-w- of the base.
called kong.’ This explanation is not correct, and many scholars disagreed with it. One of the arguments against Mao Heng’s opinion is that qing 靭 itself is never found standing alone in this meaning (Qing 靭 originally means chime stone). By contrast, kong 槲 can be used in the sense of ‘control’ as in Chunqiu guliánhuan. The meaning of the binom possibly derives from this meaning through reduplication; thus, we may assume that kong 槲 is the base and qingkong 靭槲 is a reduplicative word. In looking at the OC reconstruction for this form, we find that the two component parts differs with respect to the secondary articulation, *-J with [-round] in the former and *-Xi [-round] in the latter, thereby perfectly satisfying the phonological requirement of the retrogressive pattern.

[4] Chichú 蹦躂 *dr̥aj dr̥at > EMC dria druə, ‘pace up and down’ (Shijing)

The Shijing poem “Jingnù” (No. 42) tells an interesting story: a good girl waited for a boy at the corner of the wall, but she hid and did not show herself; the boy got so worried that he could not help scratching his head and kept pacing up and down. Here in order to express the meaning ‘keep pacing up and down’, with its sense of repetition, the poet uses the expression chichú 蹦躂, a binom which is quite possibly a progressive reduplication word due to phonological and morphological factors. In both Middle Chinese and modern dialects, chi 蹦 and chu 蹂 are basically the same in their phonological properties except for the [-round]/[+round] contrast (Beijing 1989a, Pulleyblank 1991c). Note that the distribution of the plus or minus values for the feature [round] just satisfies the requirement of the pattern. In considering their semantic implications, it is found that both chi 蹦 and chu 蹂 cannot stand respectively by themselves, but some indirect evidence proves helpful in searching the meaning they could have individually. In OC texts, chichú 蹦躂 has many variants such as chóuchú 蹨蹦 *dr̥aw dr̥at > EMC druə dria.

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72 It has been widely accepted that there is a rounding distinction between qing 靭 and kong 槲 in respect to their rhymes. Look at some other reconstructions below.

<table>
<thead>
<tr>
<th></th>
<th>Karlgren</th>
<th>Wang Li</th>
<th>Li Fang-kuei</th>
<th>Baxter</th>
</tr>
</thead>
<tbody>
<tr>
<td>qing 靭</td>
<td>-ier</td>
<td>-er</td>
<td>-erh</td>
<td>-erj</td>
</tr>
<tr>
<td>kong 槲</td>
<td>-ur</td>
<td>-ur</td>
<td>-orf</td>
<td>-orj</td>
</tr>
</tbody>
</table>

73 chi 蹦 and chu 蹂 are not collected in Beijing (1989a). But many comparable words such as zhǐ 知, zhì 智, chú 厨, and chu 厨 are available for the present purpose.
The second component parts chù 踏 and zhú 踏 in these two binoms are used to denote something which to some extent is related to the meaning of chíchú 踏踏, chù 踏 meaning 'to step on, trample, skip' as in (Liezi) and zhú 踏 meaning 'step on, trample' as in Yizhoushu. On account of their similar status as variants of one binomial word, it is reasonable to assign the meaning attested in two of them, chù 踏 and zhú 踏, to the remaining one, chù 踏. On this basis, we can assume that chù 踏 also has the meaning 'step on, trample' and thus it is qualified for serving as the base for the retrogressive reduplication word chíchú 踏踏.

[5]  Sèsuō 惜縮 *srêk ʃsrêkw > EMC shə guwk, 'keep on shrinking' (Lüshi chunqiu)

In focusing on the contrast between the two syllables, it is again found that they both differ with respect to their secondary articulation coda position, *-k in the first syllable and *-k in the second syllable. The -w contrast can be interpreted as a [-round]/[+round] contrast. We know that in order to realize [-round]/[+round] contrast the correlate for -w is expected to be -ui in the reduplicant syllable (i.e., the first syllable in this case), but -ui is not available in the OC phonological system and thus *j becomes the best choice. On the other hand, when the feature element [+round] is lost in the coda position of the reduplicant syllable under this pattern, the feature element [-round] will automatically go with [-back] by default. In short, the -w distinction is the corollary choice in meeting the [-round]/[+round] requirement in this case.

As for the semantic implication, suō 縮 has such meanings as 'to tie up with rope (Shijing); shrink (Guoyu)', which are parallel to the meaning of sèsuō 惜縮 ('keep on shrinking'), but sè 縮 does not have a meaning of this kind. It thus is determined that sèsuō 惜縮 is a reduplicative word under the retrogressive pattern.

[6]  Sīxū 斯須 *sâj sât > siə suə, ‘a little while’ (Mengzi, Liji)

74 Chíchú 踏踏 and dìzhú 踏踏 are not identical to chíchú 踏踏 from the point of view of phonology, but they are quite close.

75 In other OC reconstruction systems, sè 縮 is reconstructed as a syllable with a dental coda (e.g., Karlgren §jet). But see Pulleyblank (1977-78, 1997).

76 I believe that all kinds of modified reduplication including retrogressive pattern have two identical syllables (both equal to the base syllable) at the first stage of this process. See the discussion in Chapter One and Chapter Five.
In this binom, the [-round]/[+round] distinction is the only phonological difference between the two component parts sī 斯 and xu 須. This distinction can be also recognized in the reconstruction systems of other scholars, as in sjēg sju (Karlgren 1957), sī sīwo (Wang Li 1958), sjig sjug (Li Fang-kuei 1971), and srje sjo (Baxter 1992). But other feature distinctions such as [back] [high] are also involved in their reconstructions. Sī 斯 has nothing semantically to do with sīxū 須, while the second syllable xu 須 can stand alone in the sense of ‘wait’ as in Chunqiu guliangzhuan: xū qí chéng liè ěr hòu jǐ zhī 須其成列而後擊之 ‘we should wait for their having deployed the ranks in battle array and then attack them.’ There is obviously a semantic relationship between ‘wait’ and ‘a little while’ though we have to explain why the repetition of “waiting” could give rise to a meaning like “a little while”.

[7] Qikuò 契闔 *kʰját kʰwát > EMC kʰet kʰwat, ‘be separated far away’ (Shijing)

An investigation of OC texts shows that the meaning of the first component part qi 契 (‘carve’ in other contexts) does not relate to the meaning of qikuò 契闔. On the other hand, kuò 閣 and the binom have a semantic relationship. We can, therefore, assume that kuò 閣 is the base. This assumption is confirmed from a phonological point of view in that the [-round] (*-j-) arises in qi 契 and [+round] (*-w-) in kuò 閣.

[8] Māimù 霭穆 *mrakʲ makʰ > EMC məjik məwk, ‘light rain, drizzle’ (Shijing, Erya)

Neither mài 震 nor mù 震 occurs in any other context, and hence there is no direct way for us to know if they could have some other meaning. However, their phonetic elements may provide some clues for seeking their semantic significance. Mái 脉, the phonetic of mài 震, is a word with various meanings, but no meaning corresponds to the meaning of the binom in question.

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77 I think the reason possibly lies behind the semantic property of the word xū 須 ‘to wait’. In English, for instance, when we say “wait, wait”, it seems to mean ‘just wait a little while more’, rather than ‘(please) keep waiting for a long time’, though in general reduplication of a verb in English would produce a sense like “keep doing (something)”, e.g., crisscross (‘keep crossing’). The reduplicative form, xūyū 須臾 *sǎy láy > EMC sīa jīa, ‘moment’ (Zhuangzi; Xunzi), is likewise based on the word xū 須 ‘to wait’. In this case progressive and retrogressive reduplications seem to have the same meaning.

78 Kuò 閣 means ‘separate’ as in the Shijing 31, where one line says, 于嗟闔兮不我活兮 ‘Oh, how far away, you do not (keep me alive =) support me.’ (Karlgren 1950: 19)
Mu 沐 EMC məwk, the phonetic of mù 霉, means wash, especially wash hair, as in *Shijing* 226, where it reads, "my hair is (curling:) rumpled, I go home to wash it." (Karlgren 1950: 179) At first sight, there seems to be an obstacle to establishing a parallel semantic relationship between ‘wash’ (mù 沐) and ‘drizzle’ (māimù 霉) . However, if we consider that the English word “shower” can either denote ‘to wash one’s whole body while standing under a shower’ or denote ‘a short period of rain’, it may be easily understood that there could be a logical relationship between mài 霉 and māimù 霉 with respect to their meanings. Thus, it is reasonable to hypothesize that māimù 霉 results from the retrogressive reduplication of mù 沐 (霉). This hypothesis is satisfactory with regard to the phonological component since the crucial distinction [-round]/[+round] is recognized between the two syllables.


Many scholars have long endeavoured to understand this binom, and they have given various interpretations such as lúchānɡ 鹿跡 ‘footprint of deer’ by Mao Heng, ‘trampled placed among farmland’ for tiān 町 and ‘animal-trampled place for tuān 畔 (same as tuān 畔) by Xu Shen, and ‘empty place around the household’ by Zhu Xi (1130-1200). None of these explanations fit the contexts they are found in very well. In *Shijing* 156, the line tiantuan luchang 町疃鹿跡 ‘tiān tuān deer area’ is composed to describe what the poet saw in his house with a courtyard after a long-term corvée. Logically, what is preceded by the noun phrase 鹿場 ‘deer area’ should be a word with verbal or modifying meaning, rather than something with a nominal meaning. Hence I prefer to treat tiantuan 町疃 as a reduplicative word which basically means ‘keep trampling down’, but it here should be interpreted as ‘trampled’ to be applied in this context. This interpretation partially underlies Xu Shen’s definition. Moreover, it fits the context better since a residential area that became a deer area could be the result of the frequent trampling of deer. With regard to the phonological component, it exactly satisfies the requirement of the

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79 Mù 沐 and mù 霉 are possibly representing the same word, not just from the same root.

80 There is a problem in this respect: that is, an unexpected liquid *r arises in the reduplicant.

81 In considering the phonetic elements, these two characters seem to represent syllables ending up with a velar nasal.
retrogressive pattern. It should be noted that Baxter and Sagart (1998) also treat this binom as a reduplicative word.  

82

[10] Jíjú 撤摣 *kák83 kák\(\textsuperscript{u}\) > EMC kiajk kuawk, ‘keep working manually’ (Maozhuan)

The Western Han scholar Mao Heng uses jíjú 撤摣 to interpret jíjú 撤摣, which is used in the Shijing 155: 子手摣摣, 子所捋茶 ‘My (hands:) claws were grasping the t’u herbs which I picked’ (Karlgren 1950:100). Since both the disyllabic forms are the same in meaning and similar in pronunciation (Jíjú 撤摣 *kák kák\(\textsuperscript{u}\) > EMC kiajk kuawk; jíjú 撤摣 *kød\(\textsuperscript{l}\) káks EMC ket kia\(\textsuperscript{b}\)), they should be variants of one form. Thus we can see that the second part of jíjú 撤摣 is expected to have a meaning such as ‘grasp’ since its correlate jù 撤摣 is attested as having this sense in Laozi\(^4\). If this argument is acceptable, then, jú 撤 is qualified to serve as the base in the retrogressive reduplication in order to signal the meaning of jíjú 撤摣. From a phonological point of view, it is found that jí 撤 and jú 撤 belong in the duo 鎬 and wu 屋 rhyme groups respectively. As demonstrated in Chapter One, these two kinds of rhymes are different in their codas, *-k for duo 鎬 and *-\(\textsuperscript{u}\)k for wu 屋. These two rhymes generally present a [−round]/[+round] contrast, though this is not a perfect contrast since in this line the first syllable is supposed to be something like *-ak\(\textsuperscript{l}\), while what is actually attested is *-ak.

83 Since the rhyme of jí 撤 develops into EMC -ajk, we may propose such OC reconstructions as *-rak or *-\(\textsuperscript{u}\)ak in order to account for this special development. However, since its possible variant jíjú 撤 ends up with *-\(\textsuperscript{u}\)k\(\textsuperscript{l}\), we may propose a palatal feature for the OC form of jí 撤.

84 Laozi 55: 毒蠱不螫，猛獸不哮 ‘Noxious insects will not sting him; wild beast will not scratch his flesh.’

85 In Shunping Mandarin, both zhūa 抓 and náo 揉 share the meaning ‘grasp’. However, when the two forms are combined together, what it expresses is ‘keep working manually’. Thus we can see that a word meaning ‘grasp’ possibly produces a new meaning like ‘keep working manually’ through some kind of morphological process.

86 By Han times Type B words from the Ge rhyme group rhymed with words from Zhi rhyme group.
Qi 崻 and qū 崻 show a difference in their coda positions, where a [-round]/[+round] distinction is found though there are also other feature discrepancies involved. Enlightened by this phonological characteristic, we may expect that qū 崻 is the base for a retrogressive reduplication. However, qū 崻 cannot stand by itself. Nevertheless, on account of the phonological similarity with qū 曲 ‘crook’, qū 崻 may be traced back to a root word that means something like ‘crook’. If this form is reduplicated retrogressively, then, the new disyllabic form is supposed to signal ‘to zigzag’, a repetitive meaning. This is just the case since the meaning “to zigzag” could be considered to be basically the same as “rugged, uneven’, which is denoted by the possible reduplicative form qiqū 崻嶺.

[12] Jiānguān 間關 *krján kwán > EMC kən kwən ‘(of chariot) advancing endlessly’ (Shijing)

Regarding the meaning of this binom, there does not seem to be a final conclusion that can be reached. In consulting the ancient commentaries, we can get many proposals such as ‘description of a linchpin’, ‘sound of a chariot’s linchpin’, ‘sound of a chariot while advancing’, and ‘description of advancing by passing through many different places’. Based on these explanations as well as contexts (Shijing 218, Hanshu), I think that the meaning of this binom should be related to the advancing of a chariot since otherwise the chariot’s linchpin by itself cannot make a sound. In contrast to the uncertainty with respect to its semantic significance, the phonological component of this binom looks transparent: first, the reconstructions for the two forms are strongly supported by Middle Chinese and modern dialects; second, they are alike except for the [-round]/[+round] contrast in correlative positions between the two syllables.

So far, I have given twelve examples that give evidence of the retrogressive reduplication of verbs, accompanied with a sense of repetition, in OC, and furthermore, if the base has the feature [+round], then the reduplicant must have the feature element [-round]. Throughout the demonstration of this reduplication pattern, we can see that almost every piece of evidence

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87 Qū 崻 belongs in hou 侯 rhyme group and qū 曲 in wu 墨 rhyme group. Since the words in these two rhyme groups may rhyme together and have xiéshēng connections, it is possible to say the two rhymes are quite similar. On the other hand, some cognate words are randomly scattered in these two rhyme groups –called ‘mutual alternation of the yīn 隱 rhyme (without nasal or stop ending) and rù 入 rhyme (with stop ending)’ in traditional Chinese linguistics. This similarity is symbolized *-aŋ and *-ak in the OC reconstruction system adopted in this study.
drawn for this purpose is independent. Given this, even without other supporting evidence, we cannot doubt the reality of this pattern. Of course, if we are able to find some supporting evidence, we will feel all the more confident about the reduplication pattern just established. The following is just such supporting evidence.

(34) Chinese Fuzhou dialect (Zheng Yide 1983)

<table>
<thead>
<tr>
<th>Base</th>
<th>Reduplicative Form</th>
<th>Glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kuon31 捲</td>
<td>kin52 kuon31</td>
<td>‘just roll up’</td>
</tr>
<tr>
<td>b. p’uo24 曝</td>
<td>p’i52 p’uo24</td>
<td>‘just shine upon’</td>
</tr>
<tr>
<td>c. toy23 罩</td>
<td>ti52 toy23</td>
<td>‘just cover’</td>
</tr>
</tbody>
</table>

In these modern reduplicative binoms, the rounding feature of the bases is lost in the reduplicant finals, thereby forming a [-round]/[+round] distinction. This phonological pattern exactly parallels the OC case. The morphological implication, nevertheless, is not in accordance with the OC case. This inconsistency reflects a general development from OC to modern dialects in that the reduplication of the verb in most modern dialects no longer signals repetition.

(35) Tibetan (Li Rulong 1984)

<table>
<thead>
<tr>
<th>Base</th>
<th>Reduplicative Form</th>
<th>Glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. c’om55</td>
<td>c’am55 c’om55</td>
<td>‘to keep shaking’</td>
</tr>
<tr>
<td>b. k’öi53</td>
<td>k’öi55 k’öi54</td>
<td>‘to keep being angry’</td>
</tr>
<tr>
<td>c. log35</td>
<td>lag34 log34</td>
<td>‘to keep raising’</td>
</tr>
<tr>
<td>d. nor15</td>
<td>nor15 nor24</td>
<td>‘to loosen’</td>
</tr>
</tbody>
</table>

In both the phonological distinction between the base and reduplicant and the morphological relationship between the base and the whole form, this Tibetan retrogressive reduplication pattern is basically the same as the one found in OC. Take (35a) as an example. The base, coming after the reduplicant, presents a positive value for the feature [round], while the reduplicant presents a negative value for this feature. This minus/plus distinction for the feature [round] is parallel to the OC case. As for its semantic implication, it is also the same as that of
the OC case since these Tibetan reduplicative forms likewise signal some activities which can be consistently characterized by repetition.

(36) Classical Tibetan (Beyer 1992:135)

<table>
<thead>
<tr>
<th>Base (Base)</th>
<th>Glossary</th>
<th>Derivative</th>
<th>Glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. khums-pa</td>
<td>‘crooked’</td>
<td>kham-khum</td>
<td>‘with uneven ridges’</td>
</tr>
<tr>
<td>b. nkhrug-pa</td>
<td>‘disturbed’</td>
<td>khrag-khyug</td>
<td>‘tumultuous’</td>
</tr>
<tr>
<td>c. nkhol-ba</td>
<td>‘insensible’</td>
<td>khal-khol</td>
<td>‘stunned’</td>
</tr>
<tr>
<td>d. ndzog-pa</td>
<td>‘heaped’</td>
<td>ndzag-ndzog</td>
<td>‘jumbled up’</td>
</tr>
</tbody>
</table>

Among these four examples, the two component parts are differentiated from each other by the [-round] and [+round] distinctions. From the point of view of semantic component, it does not seem to be easy to make a clear-cut distinction between the base and the reduplicative form, but it is still possible to generalize for them a meaning related to “repetition”. For instance, the meaning ‘jumbled up’ seems to result from repetition of heaping. There is no great difference between the retrogressive reduplication in OC and Classical Tibetan concerning semantic significance.

These three attested cases present a great similarity to the OC case. With this kind of supporting evidence, we feel more confident about the reality of the pattern: if the verbal base has the feature element [+round], then, the reduplicant will not fail to show the feature element [-round]. Now let us look into what will happen if the verbal base does not have the feature element [+round].

2.2.1.2. Repetitive reduplication with [-round] in the base syllable’s final

The above discussion shows that in OC repetitive reduplication if the final of the base presents the feature element [+round], then, the opposite feature element [-round] is bound to arise in the final of the reduplicant syllable. Given this [-round]/[+round] distinction in retrogressive reduplication word, when the feature element [-round] appears in the base (the second syllable), we may expect that the opposite feature element [+round] will arise in the final of the reduplicant syllable (the first syllable). However, this expectation has failed to be attained. What we have observed is that when the base presents the feature element [-round], various other
kinds of phonological changes will occur in the final of the reduplicant, losing or adding segments or replacing features. Let us examine the group of examples in (37).

(37)  a. pufu 蟑匍 *bây bék (or bêk) > EMC bâ bêk88, ‘crawl’ (Shijing; written as pufu 蟑匍 in Zhanguoce) or fufu 扶伏 *bây bék > EMC bâ buwk, ‘crawl’ (Zuozhuan; written as fufu 扶服 in Liyi)
b. ziju 次且 *tsêj tsây > EMC tsia, ‘walk with difficulty’ (Yijing)
c. ciju 視眞 *ts³aj ts³hây > EMC ts³i ts³h³, ‘peep at’ (Shuowen)
d. jijie 超趨 *kêk³ (or k(ê)t) kâ > EMC kjit kiat, ‘rush, stride’ (Shuowen)
e. bifei 風沸 *pêk³ pêts or *pjêt pêts > EMC pjît pû³, ‘a spring welling up’ (Shijing; written as bifei 濃沸 in Sima Xiangru 司馬相如: Shanglin fu 上林賦)

Pufu 蟑匍 (37a) is a common binom in OC, and it has many variants from both a writing and phonological point of view. As far as the semantic implication is concerned, it is easily acknowledged that the binom’s meaning ‘crawl’ is closely linked to the meaning of the second component part fit 10 (fu 善) ‘lie prostrate’. In addition, the binom’s meaning can be characterized by repetition as opposed to the meaning of fu 善 (fu 善). In contrast, the first part pu 蟑 (fu 善) has semantically nothing to do with the binom, and thus it is possibly no more than a derivative syllable of some morphological process. This process is most likely a case of retrogressive reduplication.

Let us now look into the phonological component of this binom. In contrast to the above case where [+round] is found in the final of the base syllable, we cannot find this feature element in the assumed base fu 善 (fu 善). Put differently, we can say that the feature element [-round] appears in the base syllable. However, what we find in the final of the reduplicant syllable is not the occurrence of [+round]. Rather, what we find is a different phonological change. In comparing the two component parts Pú 蟑 and fú 善, it is found that their finals are totally different. As far as main vowels are concerned, the a/e distinction is found between the reduplicant and the base. Since the identical distinction is also attested in (37b-d) and this...
A distinction could be represented by the feature distinction [+low]/[-low], this appears to represent a principled alternation. However, there does not seem to be a good reason to account for the difference of the codas. The reason why -y arises at the end of the reduplicant syllable is probably because the dorsal feature of the -k in the base needs to be preserved (the -y has a dorsal feature).

The semantic implications and phonological alternations of the reduplicant syllable as in pufu are also found in the rest of the examples in (37). Their semantic implications, as illustrated in (38) below, show that they are products of retrogressive reduplication since only the second parts have semantic affinity with the binoms and the meanings of the binoms are generally related to repetition.

(38)

<table>
<thead>
<tr>
<th>the binom</th>
<th>the first part</th>
<th>the second part</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. zǐjū 次且</td>
<td>‘walk with difficulty’</td>
<td>‘lodging’ (Zuo zhuan)</td>
</tr>
<tr>
<td>b. cǐqù 比覲</td>
<td>‘peep at’</td>
<td>No other use</td>
</tr>
<tr>
<td>c. Jiǐěi 趁趣</td>
<td>‘rush, stride’</td>
<td>No other use</td>
</tr>
<tr>
<td>d. bǐfèi 勃沸</td>
<td>‘spring welling up’</td>
<td>No other use</td>
</tr>
</tbody>
</table>

As for their phonological alternation, the θ/a distinction and also some coda changes are likewise found in (38a-c = 37b-d). However, no such distinction is found between bi 裳 and fèi 炽 (38d = 37e); instead, the last coda that the base has is lost in the reduplicant syllable.

The group of reduplicative words in (39) below present a slightly different case in which the -r- appears in the base syllable but not in the reduplicant syllable.

(39) a. xūshū 處疏 *sāy srāy > EMC sā ㄍ, ‘loaf about’ (Zhuangzi)

b. gěxiá 閬轆 *kát krát > EMC kat kət, ‘pace up and down’ (Shijing)

c. miánmán 混蠻 *mjàn mràn > mjian main, ‘in rich and bright colors’ (Shijing)

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88 Jingdian shiwen: 且，蒲北切。一音服。According to this, fú 裳 should be properly pronounced EMC bək, a Grade one word with an alternative pronunciation like 服 EMC buwk.

89 A distinction that can be expressed in terms of distinctive feature indicates that it is phonologically grounded.

90 Jingdian shiwen: 且，音服。往也‘且 is pronounced cǔ; it means ‘to go’.
In (39a), the second part, shū 疏 means 'disperse (Sun Bin bingfa); few and scattered (Laozi); drift apart (Lü shi chunqiu)', which are parallel to the repetitive meaning of the binom ('loaf about'). By contrast, the first part xū 酥 does not mean something parallel to the repetitive meaning of the binom (xū 酥 means 'a thick sauce made from crabs (Shiming); look into (Shijing)'). In view of the semantic relationship between the second part and the binom, this binom is most likely a reduplicative word under the retrogressive pattern. From a phonological point of view, we can see a distinction between the two component parts dependent on whether the -r- is present or not. In particular, the -r- arises in the base syllable but not in the reduplicant syllable.

The distinction between the absence and presence of -r- can also be found in the remaining two examples (39b,c). In addition, the semantic feature 'repetition' seems suitable to be applied to all these binoms. Hence, these binoms should be reduplicative words in accordance with my generalization. One problem with this assumption is that there is no clear evidence to judge which one is the base since neither of the two component parts in each case has a meaning related to the binom. This opaque situation possibly arises because the long history of the words has blurred their origin. Since the phonological implication observed in these cases is parallel to that of xūshū 疏疏, it is possibly inferred that the second syllable in these binoms should be the base. The instances in (40) represent another example of this pattern.

(40)  a. cēncī 参差 *tsʰr̥em tsʰr̥al > EMC tʃʰim tʃʰiə, ‘irregular, uneven’ (Shijing)
       b. ānē 娉婀 *ʔam ʔal > EMC ʔam ʔa, ‘shilly-shally, undecided’ (Shuowen)

Judging from the semantic implications, these two binoms are most likely reduplicative forms under the retrogressive pattern. The basic argument in favor of this is that it is the second component part, rather than the first one, that is semantically related to the meaning of the binoms (cf., the reading of 参 only occurs in the binom and the word chā means 'differ'; ē 婿 (阿) means ‘go out of one’s way to curry favour’). The phonological contrast between the two component parts seems hard to explain since it is not easy to account for where such features as [nasal] and [labial] come from in comparing reduplicant ending *-m with the base ending *-l. One possible explanation is that the ending -m results from a kind of dissimilation effect under...
which the *-m serves as the best substitute for the original *-l. Motivated by this effect, the original ending *-l must be replaced with another ending in the reduplicant. Among the OC inventory, stops such as *-p, *-t, and *-k are available, but they cannot match the original *-l with respect to their sonority; glides *-j, *-w, *-y (\(\text{=u}\)) and *-ŋ are also available, but they all have a negative value for [consonantal], as opposed to *-l. In contrast to these, nasal *-m, *-n, and *-ŋ are better candidates for this purpose. The reason why -m eventually wins is probably because -n is too close to the -l and -ŋ is too distant.

In contrast to the case of the [-round]/[+round] distinction illustrated in the last section, the retrogressive reduplication with [-round] in the base syllable represents more complicated phonological modifications in the reduplicant finals. In spite of some details that need to be worked out, such modifications are possibly generalized as follows: if the base syllable has segments beyond the CVC template, such as "medial" -r- and the coda -s (cf., 37c), they will not appear in the reduplicant syllable; if the base syllable is already of the form CVC, a series of feature substitutions will happen to the reduplicant final. One such feature substitution is the [+low]/[-low] (or [-low]/[+low]) distinction. As for the segment deletion, a good explanation can be given in terms of the emergence of the unmarked (McCarthy and Prince 1994)\footnote{It has been shown that -n and l- are interchangeable in some dialects of modern Chinese.}\footnote{McCarthy and Prince (1994) presents an explanation about "emergence of the unmarked", saying, "... in languages where C [constraint] is crucially dominated and therefore violated, the effects of C can still be observed under conditions where the dominating constraint is not relevant. Thus, in the language as a whole, C may be roundly violated, but in a particular domain, it is obeyed exactly. In that particular domain, the structure unmarked with respect to C emerges, and the structure marked with respect to C is suppressed."}. Other issues such as why the emergence of the unmarked is achieved in the reduplicant as well as why the feature substitution takes place consistently will be discussed below.

2.2.1.3. Nouns resulting from repetitive reduplication

At first sight, we may feel that it is a little strange that repetitive reduplication, which generally occurs with verbs, should be applied to nouns. Nevertheless, that this is sometimes the case has been attested in many living languages such as the Chinese Fuzhou dialect, as seen in (41) below.
The data in (41) shows a very clear case in which monosyllabic verbs or adjectives are changed into disyllabic nouns after undergoing retrogressive reduplication. The verb soʔ23 嘴 (41a), for instance, denotes a verbal sense ‘suck’ while the reduplicative form so11 soʔ23 denotes ‘nipple (of a feeding bottle)’, which is, of course, a noun. Thus, Fuzhou people could say so11 soʔ23 ȵai52 o6 嘴嗦歹呵 ‘Oh, the small nipple of feeding bottle gets broken’ (Zheng Yide 1983). It should be noted that the reduplication that soʔ23 嘴 undergoes is retrogressive since the reduplicant, showing vowel and tonal change, comes in front of the base. The base k’oyŋ44 空 in (41j) is an adjective. After the retrogressive reduplication, the binom k’oyŋ31k’oyŋ44 is produced, with the nominal meaning ‘hole, cavity’.

The morphological process attested in the Chinese Min dialect also exists in OC. As will be demonstrated below, the retrogressive reduplication of OC verbs (i.e., repetitive reduplication) is not only a mechanism for producing the meaning of “repetition” for verbs, but also a mechanism
that changes verbs into nouns, usually with an additional diminutive sense. This is exactly the same as in Fuzhou dialect.

The first example to be discussed is jicu 蜞蠅 *ts̕okj ts̕okʷ > EMC tsik tsuwk, ‘looper, inchworm’ (Guo Pu’s (276-324) commentary on Erya, Yupian (543 A.D.); written as jicu 鎗蠅 in Fangyan). Let us make an observation on the phonological component of this binom. As shown in their OC reconstructions, it is found that the [-round]/[+round] distinction arises between the two parts. Assuming that this binom is a product of retrogressive reduplication, the second part cu 蠅 *ts̕okʷ with the feature element [+round] in its final should be the base. Besides, in line with the morphological process attested in Fuzhou dialect (see (41) above), cu 蠅 is supposed to be a verb. With further speculation, we may say that it is the retrogressive reduplication of this verb that produces the binomial noun jicu 蜞蠅. The following analysis shows that this is, in fact, the case. Jiù 就, the phonetic of cu 蠅, has remarkable semantic affinity with the binom. In OC, jiù 就 is frequently used in the sense of ‘be close to, approach’ as in the Zuozhuan · Xi 23: zé jiù mù yǐ 則就木矣 ‘Then I would already approach my coffin’. This meaning is still active in modern Chinese. In Shunping Mandarin, jiù 就 can be used in the sense of ‘be close to, shrink, wrinkle’. In Yichuan 伊川 dialect (Henan province) the activity of ‘squatting on heels’ is expressed by a verb pronounced as kə5 təjəw31 坎蹴 (就) (kə5 坎是 a suffix). We know that the most prominent characteristic of this activity is that the trunk and limbs become close to one another. Based on these facts, there is no difficulty in hypothesizing that the jiù 就 originally had the verbal meaning ‘be close to; shrink’. As we know, the outstanding characteristic of the inchworm’s movement is its getting its two ends close first, and then extending itself forward. Given this, it is understandable that a good way to denote this worm was simply to reduplicate the verb jiù 就, thereby forming the binom jicu 蜞蠅. From a morphological point of view, this word formation process is exactly parallel to that in modern Fuzhou dialect; from a phonological point of view, it falls perfectly into the retrogressive pattern with the [-round]/[+round] distinction. Thus it seems plausible that the noun jicu 蜞蠅 results from the retrogressive reduplication of the verb jiù 就.

93 People in Shunping may say, p'i11 təjəw35 təw35 təjəw35 ts'əŋ11 kə35 təfə35 lə3 皮筋兒都就成疙瘩了 ‘the rubber band has shrunk into a knot.’
94 Ji 即, the phonetic element ji 蟄, also has the meaning ‘approach’. But there is no evidence to allow us to hypothesize that ji 即 has such meaning as ‘shrink’.
Let us now examine the disyllabic noun jiqū 蟹蝎 *kʰjét kʰwēt > *kʰjét kʰwēt > EMC kʰjit kʰut, 'scorpion' (Erya, Shuowen). Consulting the second OC reconstruction form (it is so chosen in order to match the time of occurrence of the word jiqū 蟹蝎), the [-round]/[+round] distinction is recognized in this binom. From a semantic point of view, it is certainly true that the second part qu 蟹蝎 is related to the binom since qu 屈, the phonetic of qu 蟹蝎, is frequently used in the sense of ‘crook’ in OC. As far as the characteristics of the scorpion are concerned, it is easily acknowledged that “crookedness” is prominent. In the Oracle-Bone Inscriptions, the graph symbolizing the word “scorpion” is inscribed as 蟒, as in Heji 139, *mans > EMC muanʰ, and later borrowed to represent the word “ten thousand” (wàn 萬). The curving tail in this graph shows clearly that the “crookedness” of the scorpion, had already been perceived by the ancient Chinese. With an understanding of such a background, it makes sense to imagine that the ancient Chinese could reduplicate such an verb (qu 屈, meaning ‘crook’) to denote this tropical animal that has a crooked tail. This process is semantically the same as what we have seen in the Chinese Fuzhou dialect.

At this juncture, it should be noted that, in researching historical linguistics, it is very common for a shortage of data or evidence to exist in many areas. This is why we have to avoid speculation that cannot be attested. Nevertheless, if we have some evidence, though it may not be determinative for the time-being, we may still be able to make a hypothesis on which we can make further testing. This is just the case encountered at this point. Simply put, we have a group of binoms which mostly denote small things and present similar phonological alternations between the two component parts. These properties are the same as those found in jicù 蟻蛄 and jiqū 蟹蝎. However, the opaque aspect of these binoms is such that there is no way to get access to the meaning of the individual component parts since they are never independently used, or, when independently used, they are used in an irrelevant sense. In this situation, we may have recourse to other effective analyses such as phonetic element analysis, as tried above, but this does not always help either. In this circumstance, no independent evidence can be drawn on to judge which syllable is the base. However, since the meanings and phonological properties of the

95 In Longman Dictionary of Contemporary English (1995: 1276), scorpion is described as “a tropical animal like an insect with a curving tail and a poisonous sting”. That the definition particularly emphasizes the scorpion’s curving tail shows that not only Chinese people pay particular attention to the characteristic “crookedness” in referring to this small animal, but so do English speakers.
Syllables are supposed to be the products of retrogressive reduplication, it is still possible to incorporate this group of binoms into this category. Such binoms are shown in (42) below.

(42) a. pifu *bêj bêw > EMC bi buw, ‘ant’ (Erya)
   
   b. qicâo 蜻蛉 *dzêj dzêw > EMC dzêj dzaw, ‘grub’ (Zhuangzi)
   
   c. jieżué 子亙 *kât kwât > EMC kiat kwat, ‘wiggler, wriggler’ (Huainanzi)
   
   d. ðingdông 簕蜂 *tâŋ³? tân”? > EMC tej être, ‘kind of grass’ (Erya)
   
   e. lîlóu 麗唐 *ráj râw > EMC lej lëw, ‘window lattice’ (Shuowen)
   
   f. yiyû 屌聳 *lâs làts > EMC jiâh juâh, ‘kind of hat’ (Guangya)
   
   g. lîlù 麗聳 *rák rák > EMC lejk lëwk, ‘kind of tool for filature’ (Fangyan)
   
   h. jieżué 秸聳 *kêk këkw > EMC kit 96 kuwk, ‘kind of bird’ (Shuowen)
   
   i. yînyûn 氤氷 *?êj ?wên > *?ên ?wên > EMC ?jin ?un, ‘dense mist’ (Yijing)
   
   j. zhîzhû 𧁹胠 *tràj tròa > EMC tría trua, ‘spider’ (Shuowen; later usually written as 蜘蛛) 97
   
   k. yîwêi 伊威 *?jêl ?wêl > *?êj ?wêl > EMC ?ji ?uj, ‘kind of worm’ (Shijing)
   
   l. fûbû 非不 *pây pêy > EMC puâ puw, ‘kind of bird’ (Maozhuan)
   
   m. fûfû 窩屌 *pây? pât > EMC puâ’ put, ‘embroidered pattern of black and white on ancient official robes’ (Lushi chunqiu)
   
   n. châncû 蟲 العلي *dâm dêy > EMC dziam dzia, ‘toad’ (Huainanzi)
   
   o. xiâoxiāo 螪蟫 *sjêw saw (or sjaw) > EMC sew siaw ‘kind of small spider’ (Shijing)

My assumption for these examples is that they are products of the regressive reduplication of verbs. The basic evidence is that their meanings and phonological properties are generally comparable with the case of the Chinese Fuzhou dialect (see (41) above) and the just-demonstrated OC examples jicû 升 蝶 and jîqû 蝶蝶. In reviewing all these 15 forms, we can

96 In Guangyun jié 梳 is collected as the first character of the binom jiegão 梳稿 ‘well sweep’, rather than the binom jiejué 梳聳. This binom is collected in Jiyun and the fàiqiè of jié 梳 is ji jìzhì 激質.

97 The bone graph 𧁹, as in Heji 17746, is interpreted as ‘spider’. See comprehensive discussions in Takashima (to appear b) and Xu Zhongshu (1989).
find that almost all of them refer to small things. This should signify the same thing as those in (41) and jicù 蚍蝣 and jiqù 蝈蝈. In turning our attention to their phonological properties, we can find a [-round]/[+round] distinction between the two syllables in (42a-k). In (42l) *-à/-ê-distinction is recognized. The distinction in (42m-n) is hard to explain, but it is generally understandable since the expected base does not have the feature element [+round] – the modification in reduplicant finals is usually complicated in this case, as demonstrated above. The only example we cannot explain is the last one (42o) where [+round] exists in the base but no [-round]/[+round] distinction is attested. In short, most of these forms satisfy the semantic and phonological requirements for retrogressive reduplication; thus, they should be categorized into the nouns resulting from the retrogressive reduplication of verbs.

2.2.2. Retrogressive reduplication with the fixed *-àř

According to Deng Yurong (1995), the Cantonese Tengxian dialect has a particular kind of retrogressive reduplication which is applied to 204 out of 261 monosyllabic adjectives. One characteristic common to all instances covered by this pattern is that the reduplicant syllable (the first syllable) consistently presents the rhyme -erj no matter what kind of rhyme the base syllable has. Instances in (43) below clearly show this case.

<table>
<thead>
<tr>
<th>(43)</th>
<th>base</th>
<th>redupl. form</th>
<th>base</th>
<th>redupl. form</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>jı₂¹</td>
<td>‘fool’</td>
<td>jı₂¹</td>
<td>jı₂¹</td>
</tr>
<tr>
<td>b.</td>
<td>ben⁴₄</td>
<td>‘flat’</td>
<td>ben⁴₂</td>
<td>ben⁴₄</td>
</tr>
<tr>
<td>c.</td>
<td>jı₅₃</td>
<td>‘weak’</td>
<td>jı₅₃</td>
<td>jı₅₃</td>
</tr>
<tr>
<td>d.</td>
<td>ten₂₃</td>
<td>‘blunt’</td>
<td>ten₂₁</td>
<td>ten₂₃</td>
</tr>
<tr>
<td>e.</td>
<td>ŭu₅₃</td>
<td>‘crisp’</td>
<td>ŭu₄₄</td>
<td>ŭu₅₃</td>
</tr>
<tr>
<td>f.</td>
<td>nı₂₃</td>
<td>‘dense, thick’</td>
<td>nı₂₁</td>
<td>nı₂₃</td>
</tr>
<tr>
<td>g.</td>
<td>tiu₅₃</td>
<td>‘dry’</td>
<td>tiu₄₄</td>
<td>tiu₅₃</td>
</tr>
<tr>
<td>h.</td>
<td>nı₂₅</td>
<td>‘dented’</td>
<td>nı₄₂</td>
<td>nı₂₅</td>
</tr>
</tbody>
</table>

In these ten examples, the base syllables show a great variety with regard to their rhymes, but they are all realized as syllables with the fixed rhyme -erj in the reduplicant position. As for the morphological significance of this reduplication, Deng Yurong says that reduplicative words of this kind are used to emphasize or give prominence to the nature or appearance of things.
This kind of retrogressive reduplication is also found in the OC data I collected. Similar to -ŋ in the Tengxian dialect, in OC *-âŋ is chosen as the fixed element in the reduplicant during this particular retrogressive reduplication. In addition, the grammatical functions in the both cases are alike, except for a case in which some of these instances in OC represent small things (noun).

(44) a. käŋkâi 慳慨 *kʰâŋ kʰêls > EMC kʰâŋ kʰêh, ‘vehement, fervent’ (Qu Yuan 屈原: Aiying 枯郢; later usually written as 慱慨)
b. láŋli 狼戾 *râŋ râk’s > EMC lâŋ lej’h, ‘scattered about in a mess’ (Mengzi, Huainanzi)
c. huânghû 惶惚 *xwâŋ? xwêt > EMC xwâŋ’ xwêt, ‘in a trance’ (Laozi; Hanfeizi)
d. hângxiè 汇澱 *gâŋ? grjâts > EMC yan’ yan’h, ‘dew’ (Qu Yuan 屈原: Yuanyou 远遊)
e. pângbó 蒲磯 *bâŋ bâk > EMC bâŋ bak, ‘vast, boundless’ (Zhuangzi)
f. tângdî 銅錫 *dâŋ dék’s > EMC dâŋ dej’h, ‘kind of bead’ (Shuowen)
g. tângtû 鵝鵝 *dâŋ dáy > EMC dâŋ dô, ‘kind of bird’ (Erya)
h. tângdî 唐棣 *dâŋ dék’s > EMC dâŋ dej’h, ‘kind of plant’ (Shijing)
i. tângdâi 唐逮 *dâŋ dáts > EMC dâŋ dej’h, ‘reached’(?) (Shuowen)

Both käŋ 慳 and kâi 慱 as in (44a) can stand by themselves, but only the latter has a sense similar to the binom. In view of the fact that käŋ 慳 (亢) has the meaning ‘high’, one may speculate that käŋ 慳 (亢) is probably used to modify the following kâi 慱. However, this speculation seems much less possible when it is considered that kâi 慱, as a vivid adjective with

98 Different from those of (44a,b,c, e, i, j), what is denoted by the disyllabic word hângxiè, as well those of (44d, f,g,h), is a nominal meaning, rather than an adjective meaning. I think that this possibly involves secondary development.

99 What are denoted by this binom and the following two binoms (44g,h) are nominal meanings rather than adjectival meanings. I think that the nominal meaning possibly results from the secondary development of the adjectival meaning. It is common that a disyllabic adjective becomes a noun. For instance, hóng ‘huo 紅火 means ‘bustling with noise and excitement; prosperous’, an adjectival meaning. In Taigu 太谷 dialect (in Shanxi 山西 province), this word can refer to the activity which is bustling with noise and excitement, a nominal meaning.
the sense of ‘moved’, cannot be modified by adjectives (or adverbs) of degree\textsuperscript{100}. Thus, \textit{kāng} 倔 (倔) is not possibly the modifier of \textit{kāi} 慾. On the other hand, \textit{kāngkāi} 倔欲 may still be a reduplication form since the phonological contrast between its two component parts is parallel to the reduplication pattern attested in modern Chinese (see (43) above). Thus, it is reasonable to postulate that \textit{kāngkāi} 倔欲 is a derivative of this particular reduplication, with a fixed \*\textit{-ārj} in the reduplicant (first syllable) position. The other examples in (44) all follow this pattern by having \*\textit{-ār}, a rhyme belonging to Type A syllables, in the reduplicant position. The high degree of consistency between this group of OC binoms and those binoms found in the Cantonese Tengxian dialect (there is no large phonetic difference between \*\textit{-ārj} and \textit{-er}) serves as a confirmation of the reality of this reduplication pattern.

This chapter has focused on the directional reduplication in OC. After showing source data, it was found that the OC reduplication in this category could be generally subdivided into progressive and retrogressive patterns. Significantly, these patterns present generally consistent phonological relationships with certain semantic implications; that is, progressive reduplication is responsible for the occurrence of SMALLNESS (usually applied to nouns) and “VIVIDNESS” (usually applied to vivid adjectives), while retrogressive reduplication is responsible for the occurrence of “repetition” (usually applied to verbs). Why the reduplication patterns are formed in this way and why such a correspondence occurs between reduplication patterns and semantic implications will be addressed in Chapter Four, which follows a discussion of non-directional reduplication in Chapter Three.

\textsuperscript{100} As discussed in Zhu Dexi (1956,1982) and Chao (1968), Mandarin adjectives can be divided into two categories in line with their syntactic behaviors. One is an attributive adjective (epithet), and the other is a state adjective, also referred to as descriptive adjective or vivid adjective. The differentiation of two kinds of adjectives is likewise applicable in OC. Roughly speaking, the OC vivid adjective consists of the vivid reduplication words and other adjectives which potentially admit such suffixes as \textit{rán} 然, \textit{hū} 乎, and \textit{ér} 耳. \textit{Kāi} 慾 is of this category; we can see such expression as \textit{kāirān} 慾然 ‘with deep feeling’ in \textit{Liji - Tangong}. 122
CHAPTER THREE

Non-Directional Reduplication

3.0. Introduction

Although many cases of reduplication show directionality, either progressive or retrogressive, many others show that reduplication may not involve directionality. One easily recognized case is unmodified (total) reduplication in which the base remains intact in both the component parts of a reduplicative form (section 3.2). Another case is a kind of reduplication where the base syllable is apparently fissioned into two syllables, in which the first part corresponds to the onset of the base and the second part corresponds to the rhyme, unlike progressive reduplication in which the rhyme is repeated in the reduplicant after the base and retrogressive reduplication in which the reduplicant, which has the same onset, precedes the base (section 3.1).

3.1. Fission reduplication

3.1.1. What is fission reduplication?

We shall illustrate this kind of reduplication first with examples from modern Chinese dialects before searching for analogues in the ancient language. In modern Chinese fission reduplication, the onset of the base syllable is preserved in the first syllable of the reduplicated disyllable and the rhyme of the base syllable is preserved in the second syllable, preceded by a liquid onset. Thus we can see that during this reduplication process the base syllable is fissioned into two pieces corresponding to the onset and rhyme of the base. For instance, the meaning “startle, be frightened” is signaled by a monosyllabic verb tɕiŋʂ in Shunping Mandarin. In this dialect we might hear a sentence like the following: tʂ'ow31 tɕjanɔ jìʂ tɕjaw11 tʂ'ɑŋjʊ tʂ'unʊ tʂ'ɑŋς xʊn11 səŋɔ jìʂ tɕi55 lɨŋ. 瞅见一條長蟲，他渾身一激靈‘at the sight of a snake he was startled all over’. In this sentence the disyllabic form tɕi55 lɨŋ 激靈 corresponds in both phonological shape and meaning to the monosyllabic verb tɕiŋʂ, 驚. Indeed, tɕi55 lɨŋ 激靈 results from the fission reduplication of tɕiŋʂ, 驚. The onset tɕ- and rhyme -ŋ of the monosyllabic form are
separately preserved in the disyllabic form in one stage of the process; in other words, we can say that the original monosyllabic form is split into two pieces, forming two syllables. The two forms roughly share the meaning "to startle", differing only in connotation. The disyllabic form _ESCAPE(9456)\texttt{ta}i\texttt{55} \texttt{li}n\texttt{5} stresses the physical aspect and it usually refers to a physical reaction in which people are suddenly made to be surprised or slightly shocked usually resulting in trembling or even gooseflesh, while _ESCAPE(9456)\texttt{te}in\texttt{55} 驚 is a general term mainly denoting a kind of psychological state. Thus, the two meanings are quite similar but not identical. As will be discussed below, semantic distinctions of this sort between these two forms are typical in fission reduplication cases. Taking the case of _ESCAPE(9456)\texttt{ta}i\texttt{55} 驚 and _ESCAPE(9456)\texttt{te}in\texttt{55} li\texttt{n} emphasising as typical, fission reduplication can be formulated as in (1) below.

(1) Fission reduplication pattern (\(\sigma\): syllable; O: onset; R: rhyme; subscript letter for identification of the same entity; L: liquid):\(^2\)

\[
\text{Base} \quad \sigma \quad \Rightarrow \quad \sigma_1 \quad + \quad \sigma_2
\]

From this figure, we can see that fission reduplication looks more complicated since it gets two constituents (\(R_y\) and \(O_x\)) alternating while progressive and retrogressive reduplications only have one constituent (onset or rhyme) that alternates. More phonological alternations indicate that this kind of reduplication will be more difficult to deal with. In order to facilitate the study of OC fission reduplication, the correlates in modern dialects as well as in Song (960-1279) Chinese will be briefly discussed first.

3.1.2. Fission reduplication in modern dialects

In recent decades much linguistic literature has contributed to a description and analysis of a common phenomenon in modern dialects, the fission of one monosyllabic word into a disyllabic

---

1 The second syllable actually loses the original tone value because it has been subject to a further modification which results in a neutral tone.

2 This is just a general illustration. The pattern will be shown in detail in the following discussion.
The term qiejiāoci 切腳詞 ‘cutting-foot word’ first appeared in Song dynasty (960-1279). I will discuss this below in this section.

Wang Hongjun (1994) recognizes that this kind of words derives from a word formation called “one [syllable] results in two [syllables] (yī shēng èr 二) ” reduplication.

In the Fuzhou dialect there are many disyllabic words which derive from monosyllabic words. Voluminous data of this kind are provided in Liang Yuzhang (1982) and Zheng Yide (1983). Examples given in (2) below are quoted from Liang Yuzhang (1982), in which these disyllabic words are identified as qiejiāoci 切腳詞 ‘cutting-foot words’.

(2) Fuzhou qiejiāoci (the symbol □ indicates no proper Chinese character available; the semantic difference between the monosyllabic word and the corresponding disyllabic word will be discussed below and here only the disyllabic word is glossed):

<table>
<thead>
<tr>
<th>original</th>
<th>cutting-foot words</th>
<th>glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. k'ieu213 翹</td>
<td>k'ieu11 lieu213</td>
<td>‘(chair, table, etc.) to place upside down’</td>
</tr>
<tr>
<td>b. kun31 滾</td>
<td>ku31 lun31</td>
<td>‘roll about, toss about’</td>
</tr>
<tr>
<td>c. kei?4 夾</td>
<td>ke31 lei?4</td>
<td>‘press from both sides’</td>
</tr>
<tr>
<td>d. kuoη41 卷</td>
<td>kuo31 luon31</td>
<td>‘roll up’</td>
</tr>
<tr>
<td>e. hou?23 拂</td>
<td>hu14(ho11) lou?23</td>
<td>‘skip (fly) over (something)’</td>
</tr>
<tr>
<td>f. so?23 □</td>
<td>so11 lo?23</td>
<td>‘bind round tightly’</td>
</tr>
<tr>
<td>g. t'u31 吐 ‘vomit’</td>
<td>t'u31 lu31</td>
<td>‘protrude’</td>
</tr>
<tr>
<td>h. au44 囧</td>
<td>a31 lau44</td>
<td>‘concave, dented’</td>
</tr>
<tr>
<td>i. lei?23 □</td>
<td>le11(lei11) lei?23</td>
<td>‘(of train, horse, etc.) speed by’</td>
</tr>
<tr>
<td>j. p'ounη44 □</td>
<td>p'o31 lunη44</td>
<td>‘the sound of dropping into water’</td>
</tr>
<tr>
<td>k. kunη44 群</td>
<td>ku31 lun52</td>
<td>‘(measure word) (for people or animal) group’</td>
</tr>
<tr>
<td>l. t'ua44 拖</td>
<td>t'ua31 lua44</td>
<td>‘a series of, string of’</td>
</tr>
</tbody>
</table>
All these examples present common phonological characteristics which arise in the comparison between the monosyllabic form and disyllabic form; that is, as a reduplicative form of the original monosyllabic word, the disyllabic word is formed by deleting the ending (if any) of the first syllable and replacing the original initial with the liquid l- in the second syllable. In (2a), for instance, \( ku_{31} \) becomes \( ku_{31} l_{31} \), in which the original coda -\( \eta \) is deleted in the first syllable and the original initial k- is replaced with l- in the second syllable. This example is exactly the same as the fission reduplication observed in \( t\sigma i_{35} \rightarrow t\sigma i_{35} l_{0} \) in the Shunping dialect which has been illustrated above. The deletion of the coda in the first syllable and the replacement of the initial in the second syllable are not aimless phonological alternations. As will be discussed in Chapter Four below, such alternations actually result from the interaction between morphology and phonology during reduplication.

The same kind of case is also found in Mandarin. Examples in (3) are quoted from Shunping Mandarin.

### (3) Fission reduplication in Shunping Mandarin

<table>
<thead>
<tr>
<th>monosyllabic base form</th>
<th>fission reduplication form</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( k^4 o_{214} ) □ ‘mouth’</td>
<td>( k^4 o_{214} l_{0} ), (combined with ( \sigma j_{11} ) ‘shoe’ as ( \sigma j_{11} k^4 o_{214} l_{0} ) back area inside of shoe)</td>
</tr>
</tbody>
</table>

Some other cases in Fuzhou show more complexity especially with respect to the rhyme changes in the first syllable of the disyllabic word. For example, the original main vowel \( o \) becomes \( o \) in the first syllable (2f); the original rhyme -ou? becomes a segment which can be either u or o in the rhyme position of the first syllable (2e). The reason for these phenomena has been discussed in Jiang-King (1996). It is the tonal category that affects vowel distribution and alternations in the rhyme position of the first syllable; different types of finals, called by Liang yuzhang (1982) and Jiang-King (1996) the tight final (complex contour tones) and the loose final (level tone and simple contour tones), result in different alternations. For example, \( kei?_{4} \) produces \( ke_{31} lei_{4} \) ‘press from both sides’ and \( tsei?_{213} \) produces \( tsi?_{11} \) (or: \( tse_{11} \)) le?_{213}. Note that the first syllable in the former is \( ke_{31} \) while the first syllable in the latter is \( ts_{i11} \) (or: \( tse_{11} \)). Such a difference should be attributed to the different tonal pattern since different initials do not play a role in this regard and the only difference which can be recognized in the original rhymes is their different tonal patterns, level tone in the former and complex tone in the latter.
b. tjan₅₅ ‘carry, lift’
   ta₃₃ ljan.₅₅ ‘a long, rectangular bag sewn up at both ends with an opening in the middle (usually worn round the waist or across the shoulder)’

c. t'wo₅₅ 脫 ‘take off (one’s cloth)’
   t’u₃₃ lwo₅ ‘hang loose’

d. xwo₁₁ 和 ‘mix (powder) with water’
   xu₁₁ lwo₅ ‘to sweep powder together with hand, broom, and etc.’

e. t'wo₅₅ (<LMC tʰa) 拖 ‘drag’
   t’a₃₃ la₅ ‘wear shoes with the back turned in’

f. xwan₁₁ 環 ‘hoop, ring’
   xu₁₁ lan ‘an area centered around the speaker’

In comparing the monosyllabic words with the corresponding disyllabic forms, it is found that the phonological relationship between them is basically the same as that found in Chinese Fuzhou dialect, seen in (2); that is, the deletion of the coda (if any) in the first syllable and insertion of 1- in the second inevitably occur in the binoms. It should be noted that since the second syllable in the binoms always has the neutral tone, the original tone cannot be preserved in this position, but it is preserved in the first syllable. This phenomenon supports the view that any reduplication is bound to produce two identical forms (equal to base) at the beginning stage.

Fission reduplication is also attested in Jin dialects⁹. Look at the following examples:

(4) Fission reduplication in Taiyuan 太原 Jin dialect (Zhao Binxuan 1979:455-458)

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⁶ The second syllable of this disyllabic form in standard Mandarin is marked with a second tone (the tonal value is 35 in standard Mandarin) (<XDHYCD>). In Shunping Mandarin however, the second syllable of this form is always in the neutral tone. I suspect that they mark the second syllable (爹) with the second tone because they are misled by the phonetic lian 连 of the character 爹.

⁷ The second syllable is pronounced by some people as lu₅, sometimes. This alternative pronunciation results from the assimilation (the preceding syllable u as the rhyme).

⁸ This form is also found in standard Mandarin, which is recorded as tala 跳 in <XDHYCD>. But fānqiè spellers for tala 跳 in Guanyun 童 is suhe 蘇合, which is supposed to give rise to the modern pronunciation of sà. Thus it can be seen that sà 跳 has nothing to do with t’a₃₃ la₅.

⁹ Jin dialects refer to the Chinese dialects which have Entering tone (rǔshēng 入聲), spoken in Shanxi 山西 and the neighboring areas. See Li Rong (1985) and Hou Jingyi (1989).
Note: The original monosyllabic words are not provided in the source data. I make a postulation for them, indicated by parentheses, on the basis of the principle of fission reduplication and the Taiyuan phonological system (Beijing 1989a).

<table>
<thead>
<tr>
<th>Base form</th>
<th>Fission reduplication form</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (kuɣ₅₃ ‘wrap’)</td>
<td>kuə?₅₄ lə₅₃ ‘wrap’</td>
</tr>
<tr>
<td>b. (kuaʔ₂ ‘scrape’)</td>
<td>k uə?₅₄ la₂ ‘scrape’</td>
</tr>
<tr>
<td>c. (məŋ₁₁ ‘to cover’)</td>
<td>mə?₅₄ ləŋ₁₁ ‘to cover’</td>
</tr>
<tr>
<td>d. (ts‘aʔ₂ ‘wipe’)</td>
<td>ts‘ə?₅₄ laʔ₂ ‘to rub one’s shoe against something in order to remove dirt on it’</td>
</tr>
<tr>
<td>e. (*k‘au₃₃)</td>
<td>k‘ə?₅₄ lau₃₃ ‘a kind of vessel made of twigs’</td>
</tr>
<tr>
<td>f. (t‘uaʔ₁₁ ‘something shaped like a ball’)</td>
<td>t‘uəʔ₅₄ ləa₁₁ ‘(measure word, used for something in the shape of a ball)’</td>
</tr>
</tbody>
</table>

(5) Fission reduplication in Pingyao 平遙 Jin dialect (Hou Jingyi 1989)

<table>
<thead>
<tr>
<th>Base form</th>
<th>Fission reduplication form</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. pæ₅₃ ‘swing’</td>
<td>‘pəʔ₅₄ ləæ₅₃ ‘swing’</td>
</tr>
<tr>
<td>b. ti₁₃ ‘carry, lift’</td>
<td>tiə?₅₄ li₁₃ ‘carry, lift’</td>
</tr>
<tr>
<td>c. tɕio₁₃ ‘lift up (one’s leg)’</td>
<td>kaʔ₅₄ liɕ₁₃ ‘lift up (one’s leg)’</td>
</tr>
<tr>
<td>d. kəŋ₅₃ ‘a low bank of earth between fields’</td>
<td>kaʔ₅₄ ləŋ₅₃ ‘slope between terraced fields’</td>
</tr>
<tr>
<td>e. pi₅₃ (tʃkAʔ₂₃) ‘bliighted brain’</td>
<td>paʔ₅₄ lɪ₅₃ (tʃAʔ₂₃) ‘blighted brain’</td>
</tr>
</tbody>
</table>

(6) Fission reduplication in Yimeng dialect (Li Zhiguo 1991)

<table>
<thead>
<tr>
<th>Base form</th>
<th>Fission reduplication form</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. p’an₄₄ ‘dish’</td>
<td>p’əʔ₂₁ lən₄₄ ‘dish’</td>
</tr>
<tr>
<td>b. t’un₄₄ ‘hip’</td>
<td>t‘uəʔ₂₁ lən₄₄ ‘hip’</td>
</tr>
</tbody>
</table>

¹⁰ There is a word, pronounced kæ₃₅ ləwₒ in the Yichuan 伊川 dialect (in Henan province), which denotes a kind of big bowl. I think this form and the form k‘ə?₅₄ lau₃₃ in the Taiyuan 太原 dialect are two variants of one word.
The data in (4-6) all come from Jin dialects. In comparing these examples with those of the Fuzhou and Shunping dialects, we find that the phonological alternation between the monosyllable and derivative binoms is basically the same; that is, the original initial is preserved in the first syllable and the initial in the second syllable is replaced with the liquid l-. The only difference is that the constituent -a? consistently surfaces as the rhyme of the first syllable in the Jin dialects,\(^11\) while the original main vowel is retained in the Fuzhou and Shunping dialects. Of course, the discrepancy between the two cases is not of principal importance. Rather, many common characteristics shared in these cases can be generalized as follows: 1) the rhymes of the first syllable in the disyllabic forms in all these dialects are composed of one mora, with only some exceptions found in the Fuzhou dialect\(^12\); in other words, they are all defined by light syllables.\(^13\) 2) They share the same tonal pattern; that is, the tones they have are either level tone or simple contour tones, and they do not have complex contour tones.\(^14\) 3) the vowels in these

\(^{11}\) The data in (5) presents λ\(?\) in the first syllable of the binoms. From a phonemic point of view, λ\(?\) can be viewed as ø\(?\) on the basis of the following reasons: 1) λ and ø are not two distinctive phonemes in the dialect; 2) λ and ø are very similar to each other; 3) neighboring dialects as shown in (4) and (6) all take -ø\(?\) as the rhyme of the first syllable.

\(^{12}\) Since the so-called medials u and i in Fuzhou dialect do not have the consonantal feature (Beijing 1989a: 39; Luo Changpei (1931) first recognizes this characteristic for the Xiamen dialect), as opposed to similar segments which have the consonantal feature in Mandarin and other dialects, we have to admit that a syllable like kuọ31 seen in (2d), in the Fuzhou dialect is a heavy syllable (two moras). In additional to the acoustic evidence, rhyming practice also supports this treatment. As demonstrated by Li Paul J.-K. (1986), among others, in folk songs and nursery rhymes in the Taiwan Min dialect, -iV\(_x\) (V symbolizes the main vowel) can rhyme with V\(_x\) and -uV\(_x\) can rhyme with V\(_x\), but -iV\(_x\) cannot rhyme with -uV\(_x\). It should be noted that the coda -ŋ in luọŋ31, seen in (2d), would not contribute an extra mora.

\(^{13}\) In Jin dialects, the syllables ending with -? are very short with respect to articulation duration. This is evidence for treating this kind of syllable as light.

\(^{14}\) Simple contour tones refer to tones such as HM (e.g., 53 or 52) and ML (e.g., 31 or 21). The complex contour tones refer to tones such as MHM (e.g., 242) and MLM (e.g., 213 or 214). See Jiang-King (1996).
rhymes are usually assigned with a relatively lower degree of sonority. For example (Jiang-King 1996), in the Fuzhou case, if an original syllable is classified in a loose category, the vowel in the first syllable of the binoms will be changed to a higher vowel with a lower degree of sonority; thus we can find e → e, o → o, and a → a. As for the Jin dialects, we can see that no vowel is underlyingly specified in the rhyme of the first syllable; the schwa automatically surfaces by default, presenting a relatively lower degree of sonority.

The comparison made here shows that the phonological alternations between the original word and the corresponding binomial word among the cases of the Fuzhou, Shunping, and Jin dialects present some discrepancies, but some general tendencies of these alternations can still be discovered, which allow us to incorporate these cases into a process, i.e., fission reduplication.

The above discussion only stresses the phonological component, however; in order to get fuller understanding of fission reduplication, we have to look into its morphological component; that is, we have to answer such questions as what kind of general meaning this process produces and what kind of morphological motivation launches fission reduplication. At first sight, it seems quite difficult to deal with these problems since this reduplication pattern can be applied to many word classes including nouns, verbs, adjectives, onomatopoeia, and measure words. As far as I am aware, it is uncommon that a single integrated morphological process could involve so many word classes. Nevertheless, such a regulated phonological pattern makes us believe that there is quite possibly a common morphological significance. It is expected that a natural relationship between this particular phonological alternation and a consistent grammatical or semantic significance can be found. In addressing this problem, it should be first noted that what we are principally seeking is the primary sense carried by the fission reduplication; some subsidiary meaning possibly arises during this process and we must distinguish this from the primary sense. Now let us have a look into the source data provided above to reveal their common semantic significance.

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15 Wang Hongjun (1994) has come up with a similar conclusion to this.

16 Why the vowel with a relatively lower degree of sonority consistently serves as the main vowel in the first syllable and why the liquid 1-consistently occupies the initial position of the second syllable will be two of the topics in Chapter four below.
In (2a), the original monosyllabic word k’ieu₂¹ means 'stick up', as being used to describe the sticking-up hair, while the corresponding reduplicative form k’ie lieu₂¹ means '(of chair, table, and etc.) to be placed upside down'. The two meanings are distinguished but they are nevertheless very much related to each other. In (3c), the original base syllable is t’wo₅⁵ which means 'take off (one’s clothes)'. The reduplicated form is t’u₅⁵ lwo₀, which means '(usually of trousers’ legs or sleeves) to hang down as if falling off'. For example, a boy’s trousers’ legs are so long and loose that they droop down to the floor. In this case, we can use t’u₅⁵ lwo₀ to describe it. Thus we can see that the referent of t’u₅⁵ lwo₀ looks like that of t’wo₅⁵, but is not exactly the same. In (5d), kən₅³ 更 means 'a low bank of earth in the cultivated land (for saving up water during rain or irrigating)'. The reduplicated form is kən₅₄ lən₃, which sometimes has the same referent as kən₅₃, but usually denotes 'the boundary slope between terraced fields in different levels'. In this case, what the base form denotes is usually quite low, but the boundary slope denoted by the reduplicated form kən₅₄ lən₃ is possibly quite high. Again, we see that the referent of the reduplicated form looks like that of the base, but they are not exactly the same.

The above three instances show that the meaning denoted by the base form and the meaning denoted by the corresponding reduplicated form are quite similar. Hence, from a morphological point of view, the semantic implication produced during this process can be recognized as a kind of “specialization” or “extension”. That is, in recognizing that the meaning of the base form is relatively general or common, the meaning denoted by the fission reduplication form can be considered to be special or extensional. Let us look at (3c) again. In comparing the meaning of the base with that of the reduplicative form, it is found that the former ('to take off (one’s clothes)') is quite general and common while the latter ('(usually of trousers’ legs or sleeves) to hang down as if falling off') is special and extensional. Thus the latter meaning can properly be considered to be a result of a specialization of the former general meaning.

Fission reduplication with a function of “specialization” is highly needed from the expressive point of view. In communication, especially with regard to every day life, there are numerous things, activities, and properties for which there are no suitable terms to express. To satisfy the requirement for these expressions, creating a new term on the basis of existing words is a natural and economic method with respect to both phonological forms and semantic implications. For the language in question, the new expression is possibly formed through fission reduplication;
concomitantly the new form acquires its meaning from a specialization of the meaning of the base. For instance, people may sometimes need to refer to the inside back area of shoes, perhaps because some grit entered there and hurt one’s heel. In (3a) we can find that in Shunping Mandarin there is a term called ɕje₁₁ kəw₂₁₃ 鞋口 (literally ‘shoe mouth’ or ‘shoe entrance’), which refers to the “inlet” of the shoe into which the foot is inserted. To refer to the inside back area of a shoe which is reached through this “inlet”, word ɕje”k’e₂¹⁴ ləw_e has been created. In comparison with the meaning of the base form, the meaning denoted by fission reduplication is a related, but specialized meaning.

In (3f), xwan₁₁ 環 refers to hoop with a regular round shape. The corresponding fission reduplication form xu₁₁ lan_o also refers to a round thing, but it is not a hoop, but instead, an area. The meaning produced in fission reduplication can be characterized by specialty or extension.

(4d) presents another good example of the function of fission reduplication. As in many other Chinese dialects, the meaning ‘wipe’ is denoted by ts’a?₂ 擦 in Taiyuan dialect. In communication regarding every day life people may need to refer to this kind of activity, that is, to rub one’s shoe against something else in order to clean off the dirt. We may roughly use ts’a?₂ 擦 ‘wipe’ to signal this kind of activity, but it is not perfectly suitable since what is signaled by ts’a?₂ 擦 is to use hands to rub a surface, usually with a cloth, in order to remove dirt, liquid, etc. Under this condition, fission reduplication proved to be helpful in achieving this exact meaning. Fission reduplication having operated on the base monosyllable ts’a?₂ 擦 ‘wipe’, creates a new disyllabic form ts’e₅₄ la₂ and it refers exactly to the activity in question.

To sum up, fission reduplication is principally to produce a special meaning in comparison with the general or common meaning of the base. Thus, putting stress on its semantic implication, we can call this sort of reduplication, SPECIALIZATION reduplication. It is also found that fission reduplication is a good way to create new forms for signaling specific things and activities in every day life. This is the reason why fission reduplication words are very common in colloquial language. From the above examples, we can see that fission reduplication has a wide range of applications, from verbs, nouns, and adjectives to measure words. In each of these cases, apart from the SPECIALIZATION which is primarily produced during the process, some other semantic implications such as DIMINUTIVE, VIVIDNESS, and REPETITIVE are
also possibly involved and which will surface as a secondary semantic implication (the primary one is SPECIALIZATION) depends on what word category it belongs to.

3.1.3. Fission reduplication in Middle Chinese

Something analogous to fission reduplication in Song dynasty (960-1276) Chinese was pointed out by Hong Mai 洪邇 (1123-1202). In Rongzhai biji 容齋筆記, the author Hong Mai gave a total of seventeen examples of what he called qiějiǎoyǔ 切腳語 ‘cutting-foot-word’; some examples are given in (7) below. LMC reconstruction forms are given, being the most appropriate for this time period. Details of changes that may have occurred between late Tang and Northern Song (960-1127) will be discussed below.

(7) monosyllabic form
a. gu 鬼 LMC kua’ ‘run metal into cracks’
b. quan 圈 LMC kʰyan ‘circle’
c. tuan 團 LMC tfuuan ‘knot’
d. jīng 精 LMC tsiajr ‘astute, smart’
e. páng 旁 LMC phaŋ ‘vast, boundless’
f. duó 鐘 LMC thak ‘kind of bell’
g. pú 蒲 LMC phua ‘rushes, reeds’

binomial form
a. gūlù 骨露 LMC kut lua’
b. qūluán 屈攀 LMC kʰyt lyan
c. tūluán 突樂 LMC tfut lwan
d. jīling 即零 LMC tsiajr liaŋ
f. būláng 步廊 LMC phua’ laŋ
g. bólú 勃盧 LMC phuua lua

The seventeen examples cannot all be incorporated into the category since they even include ancient phonetic fusion words such as būkē 不可 ‘not possible, not permissible’ → pō 回 LMC pʰa and zhīhū 之乎 *tāy gāy > EMC tāi yo ‘it (+ particle)’ → zhū 諸 *tāy > EMC tāi. Since Hong included these old, classical, fusion words, it would not seem very safe to assume that these fission reduplication words were contemporary colloquial words. This doubt is understandable, but it is actually not a serious problem from the present point of view. Among his examples quoted in (7), except for the last one (7l) which is proved an earlier one on the basis of phonological implication, the others are the most likely contemporary colloquial words. Evidence in favour of this judgement can be found in the comment by Hong Mai himself. What he said is: 世人語音有以切腳而稱者，亦聞見于書史中 ‘In the language of contemporary people there are words formed in the way of “cutting foot”; some of them are also occasionally seen in historical texts.’
According to Hong Mai, the disyllabic forms above all result from division of the monosyllabic form; the disyllabic forms in each case share an identical meaning. This is a partially accurate observation only and we need to get further information about what kind of linguistic significance underlies this phenomenon. In my opinion, these examples are simply a case of fission reduplication.

In focusing on the phonological component, what is immediately observed is that the monosyllabic form can be restored by combining the initial of the first syllable and the rhyme of the second syllable in the corresponding disyllabic form. In looking at the disyllabic form (LMC) in (7a), we can find that the initial of the first syllable (gu 聚 LMC kut) is k- and the rhyme of the second syllable (gu 露 LMC luə) is -ua}. In putting the two pieces together, what we get is exactly the monosyllabic form gu 聚 LMC kua}. We can restore monosyllabic forms in (7b-l) by combining the corresponding disyllabic forms as well. This prominent phonological property is the same as what is found in fission reduplication cases in modern dialects (see section 3.1.2 above).

Apart from this phonological restoration, other phonological consistencies found in these examples likewise support the treatment of them as cases of fission reduplication. One easily-observed property is the liquid initial in the second syllable. As shown in the figure in (1), this l- is a regular feature of the operation of fission reduplication in modern dialects. Nevertheless, in (7k) this fixed l- cannot be found; instead, a dental nasal arises in that position. This deviation could be accounted for in terms of l/n alternation (l- and n- are two free variants of one phoneme in some dialects). As discussed in section 2.1.6.1 above, the l/n alternation is quite common in the area along Changjiang River; the same may have held true in ancient times. In (7l) the dental stop tfi-, rather than l-, occurs in that position. This reflects a later development. This tfi- originates from an l- in the earlier period. I shall discuss this example below.
There is another phonological property common to these examples. If we focus on the rhyme of the first syllable in the disyllabic form, we can find that twelve syllables out of thirteen are rushēng syllables (checked syllable); furthermore, except for cases ending in -k, all other checked syllables end in -t. It should be now noted that in Northern Song -k and -t had probably both become -? (see discussion below). For the sake of easy reference, the first syllables of disyllabic forms in (7) are repeated in (8) below. After LMC came standard Mandarin (Beijing) and some other dialects where rushēng syllables are preserved (Beijing 1989a).

(8)

<table>
<thead>
<tr>
<th>the first os</th>
<th>LMC</th>
<th>Beijing</th>
<th>Taiyuan</th>
<th>Suzhou</th>
<th>Fuzhou</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>gǔ 骨</td>
<td>kut</td>
<td>ku35</td>
<td>kʊʔ2</td>
<td>kʊʔ4</td>
</tr>
<tr>
<td>b.</td>
<td>qū 屈</td>
<td>kʰyt</td>
<td>tə’y55</td>
<td>tə’yʔ2</td>
<td>tə’yʔ2 (I)</td>
</tr>
<tr>
<td>c,f</td>
<td>tū 突</td>
<td>tfut</td>
<td>t’u55</td>
<td>t’uʔ2</td>
<td>dyʔ23</td>
</tr>
<tr>
<td>d.</td>
<td>jī 即</td>
<td>tsiak</td>
<td>tɕi35</td>
<td>tɕ’ieʔ2</td>
<td>tsin4</td>
</tr>
<tr>
<td>e.</td>
<td>bù 步</td>
<td>pʰua’</td>
<td>pʰu53</td>
<td>pʰu45</td>
<td>pʰo33</td>
</tr>
<tr>
<td>g,h,i</td>
<td>bō 勃</td>
<td>pʰut</td>
<td>pʰu35</td>
<td>pʰʔ54 (I)</td>
<td>b’yʔ23</td>
</tr>
<tr>
<td>j.</td>
<td>kū 砍</td>
<td>kʰut</td>
<td>kʰu55</td>
<td>kʰuʔ2</td>
<td>kʰuʔ4</td>
</tr>
<tr>
<td>k.</td>
<td>dī 滴</td>
<td>tejk</td>
<td>tʰ55</td>
<td>tʰʔ2</td>
<td>tʰʔ4</td>
</tr>
<tr>
<td>l.</td>
<td>kū 窟</td>
<td>kʰut</td>
<td>kʰu55</td>
<td>kʰuʔ2</td>
<td>kʰuʔ4</td>
</tr>
</tbody>
</table>

In reviewing these LMC syllables, what is easily recognized is possibly the frequent occurrence of the rhyme -ut. We may, then, propose that -ut is a fixed melodic element which is produced by this morphological process. The immediate objection to this hypothesis is that some other cases without this melody cannot be simply ignored. Let us re-consider the phonetic value of these

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18 Underlining indicates that the tone pitch is of very short duration.

19 (I) indicates literary pronunciation while (II) indicates colloquial pronunciation.
rhymes from a different angle in order to see if we can find a more consistent way to deal with these forms as a whole, thereby achieving a natural account for this morphological process.

As mentioned above, the data in (7) is provided by the Song scholar Hong Mai 洪邁, whose original family home was located in southern China, that is, Poyang 鄱陽 (now known as Boyang 波陽), Jiangxi 江西. However, this does not mean that these disyllabic forms were from that dialect at that time. Rather, these forms most likely came from the language of the Central Plain area, typically represented by the dialects of Kaifeng 開封 (the capital) and Luoyang 洛陽 (an important cultural centre; quite close to Kaifeng). This hypothesis is supported through consideration of the following evidence. Hong Mai is well known as a learned scholar familiar with the decrees, regulations, and customs of the Song dynasty (see Songshi 宋史 373). There is no doubt that he was familiar with the standard language which was based on the language in the Kaifeng and Luoyang area, especially if we can take his family background into account – when he was born his father was an official of the Song government in Kaifeng. In addition, as far as I am aware, some of these disyllabic forms are still used in Mandarin (the modern language in Kaifeng and Luoyang is categorized as Mandarin).

At this juncture, what we should do is apply the proper phonetic values of the language to those forms. What we have applied is actually LMC. As noted in Chapter One above, LMC is mainly established on the basis of the language represented in early rhyme tables such as the Yunjing, and it represents the standard language (Chang'an dialect) in the eighth or ninth century. Given the fact that the data in question virtually all come from Song dynasty, it is not appropriate to make a simple application of LMC to it. We need to know what the language of Kaifeng and Luoyang in Song dynasty sounds like. Fortunately, a skeletal rhyme table reflecting the eleventh century phonology of the language can be extracted from the Huangji jingshi 順極經世 of Shao Yong 郭雍 (1011-1077).\(^\text{20}\) Let us illustrate just one feature implied in this table. In the earlier rhyme tables, the rù rhymes (ending with voiceless stop) and yáng rhymes (ending with nasal) are arranged in the same table. This is understandable since they can match each other in terms of place features; that is, -p matches -m, -t matches -n, and -k matches -ŋ. This arrangement is greatly changed in Shao Yong’s table; in particular, except for the rù rhyme with

\(^{20}\) According to Zhou Zumo (1943 [1966]), this rhyme table reflects the language of Luoyang at that time. He further pointed out that Luoyang was not a long way from the capital Kaifeng, and their languages should not be very different. Therefore, we can treat the language presented in Huangji jingshi as the standard language of the Song dynasty, used in the Central Plains area including Kaifeng.
-p ending which still matches the yáng rhyme ending with -m, the rú rhymes with -t or -k are all arranged in the tables with yīn rhymes with a glide or zero ending. According to Zhou Zumo’s (1943 [1966]) understanding, this different arrangement indicates that the endings -t and -k had disappeared in the language of Kaifeng and Luoyang in the Northern Song dynasty. Furthermore, he speculates that the tone pitch of these rú rhymes was still of very short duration, so that they could remain in one distinctive category. Since such endings could not completely vanish without a trace over such a short period of time, it is reasonable to think that there was a glottal stop in the ending position of these rú rhymes. To put this into practice, I reconstruct the syllables in (8) as in (9) below. Again I follow the same order as that in (7) and (8) for the sake of easy reference.

(9)

<table>
<thead>
<tr>
<th></th>
<th>the first os</th>
<th>LMC</th>
<th>standard Chinese in Song</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>gǔ 骨</td>
<td>kut</td>
<td>ku?</td>
</tr>
<tr>
<td>b.</td>
<td>qǔ 屈</td>
<td>kʰyt</td>
<td>kʰy?</td>
</tr>
<tr>
<td>c,f</td>
<td>tú 突</td>
<td>tfu̯t</td>
<td>tfu̯?</td>
</tr>
<tr>
<td>d.</td>
<td>jī 即</td>
<td>tsiqk</td>
<td>tsi?</td>
</tr>
<tr>
<td>e.</td>
<td>bù 步</td>
<td>pʰua̯</td>
<td>pʰua̯</td>
</tr>
<tr>
<td>g,h,i</td>
<td>bó 勃</td>
<td>pʰu̯t</td>
<td>pʰu̯?</td>
</tr>
<tr>
<td>j.</td>
<td>kǔ 枯</td>
<td>kʰut</td>
<td>kʰu̯?</td>
</tr>
<tr>
<td>k.</td>
<td>dǐ 滴</td>
<td>tejk</td>
<td>ti̯?</td>
</tr>
<tr>
<td>l.</td>
<td>kǔ 窟</td>
<td>kʰut</td>
<td>kʰu̯?</td>
</tr>
</tbody>
</table>

21 This point is supported by modern dialects. In modern dialects, the ancient voiced stop ending -p, -t, and -k may remain intact as in Cantonese, partially vanish as in Min dialect, merge as -ʔ as in Jin dialects, totally vanish but remain in one category distinguishing it from other tonal categories as in the Xiang dialect, or completely disappear as in standard Mandarin.
According to this reconstruction (standard Chinese in Song), we can see that almost all disyllabic forms in (7) present a fixed segment -ʔ as the coda of the first syllable. In addition, since the glottal ending -ʔ may not contribute a mora to the syllable, we can see that all these syllables are light syllables in terms of prosodic features. This is basically the same as what has been attested in the modern Jin dialects (see (4-6) above), in which the reduplicative forms consistently present a fixed glottal ending -ʔ in the first syllable.

Now let us have a look into the morphological component of these fission reduplication forms. In Rongzhai biji, Hong Mai pointed out the correspondence between the original form and the disyllabic form, but he did not compare their difference in terms of semantic significance. Nevertheless, some of them are still used in modern dialects such as Shunping Mandarin, and thus it is possible for us to get access to them for this purpose. Generally speaking, the semantic distinction between the monosyllabic base and the corresponding disyllabic form in each case is parallel to other cases in modern dialects; that is, to take the meaning denoted by the monosyllabic form as a general and common one, and the meaning denoted by the corresponding fission reduplication form as marked with SPECIALIZATION. For instance, in (7d), jǐng 精 means ‘astute, smart, clever’; the corresponding fission reduplication form jìling 即霢 has a similar meaning but emphasizes quick reaction and movement. The two meanings are similar but not exactly the same.

To discuss (7l), we first need to know that the second syllable (character) tuó 鸩 originally had a lateral liquid initial l- and later on this segment was subject to a rule by which it was changed to d- in EMC, tǐ- in LMC and t'- in Mandarin. In Shunping Mandarin this fission reduplication form is pronounced as k"x t'α，which denotes a sort of hole built on the wall for hens to give eggs. It looks like a nest (“nest” is denoted by the original monosyllabic form kē

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22 Búláng 步廊 (7e) does not show such a fixed rhyme in the first syllable of the disyllabic form. Since in modern Chinese dialects this position may be occupied by either fixed melody (e.g., Jin dialects; see (4-6)), or what is left after deletion of the ending (e.g., Fuzhou dialect (see (2)), we may explain this exception in the same manner; that is, this inconsistency may be determined by different dialects.

23 See the discussion about reconstruction of these kinds of initial consonants in section 2.1.5 above.

24 The diacritic ' on the top-right corner of the vowel signals that this vowel is retroflexed.

25 Since Hong Mai does not point out what meaning kūtuó 窩鴞 exactly denotes, it at first sight does not seem safe to assume its meaning is identical to that in modern Shunping Mandarin. It is certain, however, that Hong Mai
This section and the preceding one have focused on fission reduplication in modern Chinese and Middle Chinese, in which we are generally well informed about what this kind of reduplication looks like. With such an understanding of fission reduplication in the descendent forms of the language, it should be easier for us to make a description about how fission reduplication operates in the ancestral form of the language, i.e., OC.

3.1.4. Fission reduplication in Old Chinese

Fission reduplication cases in modern dialects and Middle Chinese present highly-consistent properties with respect to both morphological and phonological components. From a morphological point of view, the semantic derivation from a monosyllabic base to a disyllabic fission reduplication form in all these cases can be characterized by SPECIALIZATION. As far as phonological components are concerned, the most significant characteristic attested in all these cases is that the original monosyllabic base is fissioned into two syllables during this process. Thus the monosyllabic base can be restored by combining the onset of the first syllable with the rhyme of the second syllable in the corresponding fission reduplication form. In addition, it is found that there are two kinds of phonological alternations, realized in the rhyme of the first syllable and onset of the second syllable, common to all these cases. First, the lateral liquid l- always appears in onset position of the second syllable in a fission reduplication word. Second, a relatively simple rhyme, a light rhyme (one mora) or a heavy rhyme (two moras) without a coda, occupies the rhyme position of the first syllable; the light rhyme in each case could be composed of either a main vowel followed by glottal stop, as in the Jin dialects and MC, or what is left over after coda deletion as in Shunping Mandarin and most of the examples in the Chinese Fuzhou dialect. Now let us examine the case of OC fission reduplication.
Generally speaking, OC fission reduplication is basically the same as in MC and modern dialects with respect to both phonological and morphological significance; that is, the monosyllabic base is fissioned into two syllables, with regulated phonological alternations in the first rhyme and the second onset of the disyllabic fission reduplication word, with a simultaneous specialization in meaning taking place. There are some discrepancies found between OC and modern dialects as well as MC, but even so, the pattern is basically consistent. The following are two examples of discrepancies.

First, in OC fission reduplication both the lateral liquid *l- and the dental liquid *r- appear in the onset position of the second syllable, unlike the modern and MC cases, where only *l- is used. That one more segment *r- appears in that position is not surprising since *r- is also a liquid and it thus could serve as *l- does. On the other hand, as assumed in section 2.1.4 above, the alternation between *l- and *r- are possibly phonologically conditioned. Thus, the involvement of *r- does not present basic peculiarity in comparison with modern and MC cases.

Second, in OC fission reduplication, the first rhyme in the disyllabic form is composed of two moras (all OC syllables are heavy syllables\textsuperscript{27}), while the analogy in the modern and MC cases is that an overwhelming majority are composed of one mora. This discrepancy creates a more complicated rhyme in the OC case compared with the other cases. Simply put, the rhyme in the OC case generally retains the main vowel of the base syllable, and the coda of the base syllable corresponds in some way to that of the second syllable (the rhyme of the base syllable equals that of the second syllable). This characteristic is quite different from what we have found in other cases. However, even with this discrepancy between the OC case and other cases, we can still see that the first rhyme of the disyllabic form presents a tendency shared by all these cases; that is, the rhyme is inclined to become a simple rhyme, usually -VC. Details of the OC case will be given below with the discussion of some concrete examples.

In short, it has been preliminarily found that the case of OC fission reduplication is to a great extent parallel to that of modern dialects and MC. Thus it is possible to make an examination of the OC case by using the discoveries made in other cases for reference. I shall first illustrate some OC examples, showing how the process makes a monosyllabic base become a disyllabic fission reduplication form, focusing on both the semantic and phonological components. After discussing these relatively transparent examples (where the monosyllabic base has been possibly

\textsuperscript{27} It has been assumed that in OC there are some pre-syllables which possibly only include one mora. But these kinds of syllables do not represent independent content/lexical words.
found), I shall extend the discussion to some relatively opaque examples (monosyllabic base not found). Since how to account for the first rhyme, especially the coda, of the disyllabic form is the most difficult issue in dealing with OC fission reduplication, for the sake of expository convenience, I plan to pay a little attention to the main vowel and "medial" but not get too involved with them in the present discussion. I shall have a section (section 3.1.5) to address this difficult issue exclusively.

[1] **tou** 頭 *dáu > EMC dəw 'head' (Liji) → **dúlou** 儀 貝 *dák rát > EMC dəwk ɿw, 'skull' (Zhuangzi)

In reviewing these two forms, it is found that the base and fission reduplication forms are related in appearance. If we combine the initial of **dú 儀** with the rhyme of **lóu 貝**, then, what we get is exactly the monosyllabic form **tou** 頭; besides, the initial of the second syllable in the disyllabic form is the liquid *l- and the main vowels are the same. Given these facts, it is reasonable to hypothesize that fission reduplication is involved in this case.²⁸ That is, it is the fission reduplication of **tou** that produces the disyllabic form **dúlou**. The semantic relationship between **tou** and **dúlou** is likewise in favor of this hypothesis. They both occur in pre-Qin (before 221 BC) texts, in which **tou** means head, while **dúlou** means 'skull'. Although a skull is related to a head, they are of course not the exact same thing. If we take the meaning of **tou** as being general or normal, then we can think of the meaning of **dúlou** as being comparatively specialized. This contrasting semantic characteristic is the same as in the MC and modern dialect cases.

[2] **xié 挟 *giáp > EMC ɣep, ‘press between; clasp under the arm’ (Yili, Mengzi) → húdié 胡蝶*gáy ljáp > EMC ɣò dep ‘butterfly’ (Zhuangzi)²⁹

²⁸ Cf., the figure in (1) above. The first syllable of the disyllabic form, which I have paid little attention to for the time being, actually satisfies the requirement of fission reduplication. The details will be shown in section 3.1.5 below.
²⁹ As pointed out by Pulleyblank (personal communication), the word “butterfly” in Tibetan is **p’ye-ma-leb**, where **p’ye-ma** means “flour dust” and **leb** means “flat” and must be cognate related with **ḥ다β ‘wing’**. In consideration of what happens to the word in this cognate language and the fact that in Chinese **dié 蝴蝶** in **húdié 胡蝶** is similar in sound to the word **yè 叶 ‘leaf, foliage’**, it is worth thinking about the formation of **húdié** in a way similar to that in Tibetan. This would lead to a different etymology from the one suggested here.
Let us consult the reconstruction for this word first. In MC and some modern dialects, hu 胡 has a voiced velar fricative initial, e.g., γ- in Shuangfeng (Beijing 1989a). In addition, hu 胡 has a xiéshēng connection with velar stops. Furthermore, this initial and the voiced velar stop g- are complementarily distributed with regard to the finals in MC. Given this, the initial of hu 胡 should be reconstructed as *g- for OC. By the same token, the initial of dié 蝶 should be restored as the lateral liquid *l-.\(^{30}\)

Judging from its phonological properties, húdié 胡蝶 is quite possibly a fission reduplication word. As far as its base is concerned, my suggestion is that xié 択 be considered. Xié 択 in OC is reconstructed as *gjàp, whose initial is the same as that of hú 胡 *gày and whose final is the same as that of dié 蝶 *ljáp. In addition, the onset in the second syllable is the liquid *l-, which also satisfies the fission reduplication pattern. An apparent problem is the absence of the original *-j- in the first syllable since in accordance with the OC fission reduplication pattern just tentatively established, this *-j- is supposed to arise. An explanation for this problem is possibly reached in consideration of the general nature of the first rhyme. As mentioned above, the first rhyme of a fission reduplication word has a tendency to become a simple one. This nature is easily understood with regard to modern and MC cases since the deletion of the coda and presence of a fixed -2 (see sections 2.1.2 and 2.1.3) clearly bear it out. In the OC case the same thing basically holds true. As we will see below, it is found that in the case of a base syllable with such post-codas as *-2 and *-s,\(^{31}\) which are responsible for the presence of MC rising tone and departing tone respectively, these codas are all deleted in the first rhyme. This deletion should be attributed to the requirement of simplification for this rhyme. This simplification requirement also puts constraints on the “medial” position. Among the fission reduplication data I collected, there is no *-j- founded in the first rhyme (cf., the next example fúyáo 扶揺).\(^{32}\) This

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\(^{30}\) See the relative discussion in 2.1.5 above. In Chinese Fuzhou dialect, húdié 胡蝶 is pronounced as xú44 lie4 (Beijing 1964:56). This case can be treated as supporting evidence for postulating liquid *l for dié 蝶 in OC.

\(^{31}\) These post-codas are still found in the second syllable since the final of the second syllable is same as that of base syllable.

\(^{32}\) But *-w- frequently appears in this rhyme. This is probably determined by some intrinsic feature -w- has exclusively. As shown in some studies (e.g., Bao 1996), the glide -j- and -w- sometimes differ systematically in their behavior. This asymmetry could possibly be involved in this case so that *-w- could be preserved while *-j- cannot. Nevertheless, why *-w- could be preserved in that rhyme needs further study. It is possibly helpful if we consider that *-w- could have originally been a secondary articulation (e.g., Pulleyblank 1962, 1991b; Li 1971).
is possibly also treated as a result of the simplification constraint. Thus it can be seen that the phonological properties reflected in húdié 胡蝶 basically meet the requirements of a fission reduplication word in treating xié 挎 (in Shuowen a word called jiádié 蛱蝶 *kjáp ljáp means butterfly) as the base.

Xié 挎 is a verb, meaning ‘to press from both sides; carry something under one’s arm’. When a butterfly is in motion, its wings flap continually. Such a motion can be considered (not identical) to be a repetition of the action signaled by the word xié 挎. Therefore, according to my assumption, it is possible to repeat this verb to denote the type of insect associated with this action. Thus the special motion of a húdié 胡蝶 ‘butterfly’ looks like the general action denoted by the verb xié 挎, while not being exactly the same. Such a semantic relationship can be considered as a general/special one, which is identical to what we have found in cases of modern and MC fission reduplication. We know that there is a change from verb to noun under this assumption. This is acceptable since it is quite common for reduplication of a verb to give rise to a noun.

In the search for the monosyllabic base for húdié 胡蝶 another candidate to be taken into consideration is jiá 夹 *kjáp, which means ‘tweezers, pincers’. As we know, when a butterfly is in a state of motionlessness, it usually holds its four wings in an erect position. While in this position the butterfly looks like a set of tweezers or pincers. In comparison with the meaning of jiá 夹, the semantic significance reflected in húdié 胡蝶 can be characterized by SPECIALIZATION, which coincides with what is typically found in fission reduplication. It warrants mention that the initial of jiá 夹 is not same as that of hú 胡, however, differing with respect to their voicing. This is not a very serious problem, however, since they are both velar stops.

Here, I have given two possible monosyllabic bases for húdié 胡蝶. In fact, xié 挎 ‘to press from both sides’ and jiá 夹 ‘tweezers, pincers’ are cognates due to their similar pronunciation and their similar meaning; therefore, the two hypotheses do not contradict each other.

[3] Biāo 瀛 *pjâw > EMC pjiaw, ‘strong wind’ (Sun Bin bingfa, Erya, Shiji) → fùyâo 扶摇 *bây làw > EMC pua jiaw, ‘whirlwind’ (Zhuangzi)
In *Erya*, the earliest Chinese dictionary, the disyllabic form fùyáo 扶摇 is treated as a semantic equivalent of the monosyllabic form bǐāo 比.[33] Nevertheless, these two forms are different in meaning. As shown by its concrete use in *Zhuangzi*, fùyáo denotes “whirlwind”.[34] As for bǐāo, although its referent could include “whirlwind”, “whirlwind” is not the only thing it denotes. In fact, bǐāo is a relatively-general term which means “strong wind”, rather than exclusively “whirlwind”. [35] Thus it can be seen that bǐāo and fùyáo are much related in meaning; the meaning of fùyáo can be considered a result of a specialization of the meaning of bǐāo. Since such a semantic relationship has been attested in other fission reduplication cases, fùyáo should stem from the fission reduplication of bǐāo.

The phonological properties of these forms support this proposal. First of all, we have to point out that the first onset *b- in fùyáo is not identical to the onset of the supposed base syllable *pjaw (bǐāo 比).[36] However, since b- and p- differ only with respect to their voicing, this problem is not serious. On the other hand, since fǔ 扶 has two readings, fǔ (*bǎy) or fǔ (*pǎy) (see *Yupian*), and fùyáo is not a word in the colloquial language, we are actually not sure which reading is appropriate. There is a possibility that this syllable has the voiceless onset *p-. In addition, given that the writing form of this word may have been corrupted on the basis of folk etymology,[37] we may even speculate that the first character of fùyáo 扶摇 was originally fǔ 扶, a character usually representing a syllable with a voiceless onset *p-.[38]

Other phonological elements tally with the requirement of a fission reduplication word. The rhyme of the second syllable is the same as that of the base syllable bǐāo and the main vowel of the first rhyme is identical to that of the base syllable. Besides, liquid *l- occupies onset position

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[33] *Erya*·Shitian: fùyáo wéi zhī bǐāo 扶摇謂之僣 ‘fùyáo is called bǐāo.’

[34] *Zhuangzi*·Xiaoyaoyou: tuán fùyáo ěr shàng zhē jiǔ wàn lǐ 搏扶搖而上者九萬里 '(the roc) made an whirlwind and soared up to ninety thousand lǐ high.'

[35] For example, in *Liji*·Yueling, we can read a sentence like this: bǐāo fēng bāo yǔ zhòng zhi 風暴雨leet 瀚暴雨總至 ‘strong wind and torrential rain come together’. In this sentence, bǐāo fēng is parallel to bāo yǔ ‘torrential rain’, it is referring to strong wind, rather than specifically a whirlwind.

[36] According to fission reduplication words attested in MC and modern cases as well as other OC examples, these two onsets are identical.

[37] For instance, the early Tang (618-907) scholar Cheng Xuanying 成玄英 interprets fùyáo as 風氣相扶搖動 ‘wind and air support and shake each other’. He inappropriately interprets fùyáo as a form composed of two independent verbs with full content meanings respectively.

[38] The character fǔ 扶 has two readings: *pǎy ‘male person’ and *bǎy ‘introductory particle’.
of the second syllable. As for the absence of *-j-, which appears in the base syllable, from the first rhyme, the reason lies behind the tendency to simplification (see the discussion above). The coda problem is also explainable (see 3.1.5 below). All these properties exhibit fission reduplication. Fúyáo (*báy/páy làw) is quite possibly a product of the fission reduplication of a monosyllabic form biǎo (*pjaw).

[4] Huò 鎝 *wák > EMC ɣwak ‘big cooking pot, cauldron’ → húluò 侍落 *wây rák > EMC ɣɔ lak ‘description of largeness in volume; spacious’

Let us first read a story recorded in Zhuangzi • Xiaoyaoyou:

魏王賜我大瓠之種。我樹之成而實五石。以盛水槨，其堅不能自舉也。剖之以爲瓢，則侍落無所容 The King of Wei gave me the seed of big bottle gourd. I grew it and made it ripe; the bottle gourd has a volume of five shi 39. In using it to hold water or sour drink, it is not firm enough to bear such weight; in cutting it into two gourd ladles, then, they are so large that there is nothing proper which could be contained in them’. From this quotation we get a disyllabic form húluò 侍落, which has occasioned many controversial explanations. 40 Among these explanations, the best one is “spacious; empty” because this explanation satisfies the context the best. Nevertheless, why this disyllabic form could have such a meaning is still at issue. Since this disyllabic form cannot be semantically decomposed on one hand and since Chinese morphemes basically have a monosyllabic structure on the other hand, it should come from a secondary development. As a matter of fact, both phonological and semantic properties support the view that húluò 侍落 is a fission reduplication word. In line with what we have found in other fission reduplication examples we can search for the original monosyllabic base by applying the phonological rule which underlines the fission reduplication. By doing so, we have an OC syllable *wák restored through combining *w(áy) with *(r)ák. The OC words which are pronounced as *wák are not many, but one of them is quite possibly what we are searching for, that is, huò 鎝 *wák. Huò 鎝 is a very old word, even found

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39 1 shi ≈ 50 liters.
40 We get such explanations as “flat and shallow” (Tang (640-907) scholar Cheng Xuanying), “crisscross and (of plant) withered” (Sima Biao (died before 306)), ‘empty, spacious’ (quoted in Jingdian shiwen; Xu De'an (1948 [1991]); Tödö 1953 [1987])
in the Oracle-Bone Inscriptions of Shang dynasty.\textsuperscript{41} It denotes a kind of cooking pot or cauldron. In ancient time, one cruel punishment was to boil the prisoner and the pot \textit{huò 鍋} was used for just this purpose\textsuperscript{42}. Thus we can see that this pot was really big. Fission reduplication launched on the basis of this word is most likely to produce a disyllabic form with such an adjective meaning as spacious. Under these conditions, I feel reasonably sure that \textit{húluò 湜落} stems from the fission reduplication of \textit{huò 鍋}.

\begin{itemize}
\item \textsuperscript{41} In the Oracle-Bone Inscriptions, there are some slightly-different graphs for this character and one of them is like this: \includegraphics[width=0.1\textwidth]{figure.png} (\textit{Yi} 2818). This is a pictogram, in which a bird is being cooked in a pot.
\item \textsuperscript{42} See Hanshu Xingfazhi 漢書·刑法志, as well as the correlative commentary given by Yan Shigu (581-645).
\item \textsuperscript{43} In association of this term with the similarly-pronounced term \textit{gōulóu 鱗偻} \textit{*kátì rákù} > EMC \textit{kwak low} ‘hunchback’, Tōdō (1953[1987]) proposes that \textit{júlù 輔錄} \textit{*kátì rákù} > EMC \textit{ku₄ luawk} ‘description of working with crooked arms’.\textsuperscript{43} In terms of both phonological and morphological points of view, \textit{jú} \textit{*kák} and \textit{júlù \textit{*kátì rákù}} can be associated in terms of fission reduplication; that is, \textit{jú \textit{*kák}} is fissioned into the disyllabic form \textit{júlù \textit{*kátì rákù}}, accompanying a \textsc{Specialization} from verbal meaning to adjectival meaning.
\item \textsuperscript{44} \textit{jú} \textit{*kák} is not a common word in OC, but there is no doubt of its reality since it is etymologically related to common words such as \textit{qù 曲 \textit{kák} > 'k₄uawk ‘bent, crooked’}.\textsuperscript{44}
\end{itemize}
As early as two thousand years ago scholars came to recognize the equivalent meaning of these two terms.\(^\text{45}\) Afterwards, scholars such as Gu Yanwu 顾炎武 (1643) further revealed the peculiar phonological relationship between them; that is, jili could perfectly serve as a fanqie spelling for \(\text{ci}\).\(^\text{46}\) The ancient scholars’ observations were accurate, but they failed to account for why there is such a relationship. Actually, in accordance with the pattern based on both modern and ancient Chinese cases it is not hard to recognize that jili is formed through the fission reduplication of the monosyllabic form \(\text{ci}\) – besides the fact that combination of the initial of the first syllable and the rhyme of the second syllable turns out to be \(\text{ci}\), we also see a liquid in the initial position of the second syllable, which is also required by this reduplication pattern. Nevertheless, just based on ancient commentaries, there does not seem to be any semantic difference between these two forms. However, given the fact that \(\text{ci}\), has other kinds of meaning such as “thatch roof” while jili only has the meaning “puncture vine”, we may assume that \(\text{ci}\) primarily did not exactly mean “puncture vine”; instead, it possibly denoted a kind of plant which included puncture vines. If this is correct, then, we can still see SPECIALIZATION in meaning in the process from the monosyllabic form \(\text{ci}\) to the disyllabic form jili.

\[\text{yuē 悦}^{*}\text{lwaō > EMC jwiat ‘happy’} \rightarrow \text{yáoyuè 搖悦}^{*}\text{lāw lwat > EMC jiaw jwiat ‘very pleased with oneself’ (Song Yu 宋玉: Jiubian 九辩)}\]

In considering the fact that the monosyllabic base is identical to the second syllable of the disyllabic form in this example, we may think of it as being unusual since such an identity is not supposed to be realized in the case of fission reduplication. Actually this is no more than coincidence. On one hand, the monosyllabic base happens to have a liquid as its onset; on the other hand, the operation of fission reduplication is bound to produce a liquid onset in the second syllable. In view of this, there is no surprise in finding such an occurrence. The semantic implications in this case also conform to the requirements of fission reduplication. Yuē means

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\(^{45}\) See Erya • shicao 稲 • 释草 and commentaries on Shijing 46 and 209 given by Mao Heng 毛亨 and Zheng Xuan 鄭玄.

\(^{46}\) Gu Yanwu (1643 [1982]: 49-55) made use of this case to claim that fanqie, as a method of phonetic notation, is entirely a product of Chinese origin, rather than being influenced by the study of other languages such as Sanskrit.
“happy” while yáoyuè means “very pleased with oneself”. Again, such a semantic difference can be marked with general/special contrast.

[8] xīē 歇 *xát > EMC xiát ‘stop’ (Zuozhuan) → xīyi 戏泄 *xāl làts > EMC xígʰ jíajʰ ‘rest’ (Fangyan)

There is an entry in Fangyan which says xīyi xiē yē chū wèi zhī xīyi yānxī yē 戏泄，歇也：楚謂之戲泄，奄息也。xīyi is equal to xiē; it is called xīyi in the Chu area (an area in south China) and xīyi means “rest”. A fission reduplication case is implied here since there is a phonological and semantic correspondence between xīē and xīyi in line with fission reduplication. Xīē primarily meant “stop” and developed the meaning “rest” in Tang dynasty (see HYDZD 3:2145). “Stop” and “rest” are related; this is the reason why xīē (“stop”) was employed to define xīyi (“rest”47) roughly. To think of xīē as being the base for the fission reduplication form xīyi, we can see that the meaning has been changed from a general one (“stop”) to a special one (“rest”). The phonological correspondence between xīē (*xát) and xīyi (*xāl làts) basically satisfies the requirement of fission reduplication. A slight discrepancy in this regard is that the second syllable of the disyllabic form has a post-coda *-s (the origin for the departing tone in MC) which does not exist in the original monosyllabic form xīē (*xát). Nevertheless, since the part beyond this *-s is identical to that of the base and since yi 戏泄 has an alternative reading which turns out to be a checked syllable without this *-s, such a slight discrepancy should not discount the proposal that xīyi (*xāl làts) is a product of the fission reduplication of xīē (*xát).

In the above discussion, the recognition of fission reduplication forms is always achieved along with recognizing the corresponding monosyllabic base. Nevertheless, there are cases in which a disyllabic form is quite possibly a fission reduplication word but it is hard to pinpoint the corresponding monosyllabic base. Such cases are understandable, because while it is true that there are a tremendous quantity of texts written in ancient Chinese, these texts are nevertheless undoubtedly an incomplete record of the language, especially concerning its colloquial forms. Given this, it should not be surprising that we are unable to find the

47 We say that xīyi means “rest” because Yang Xiong, the author of Fangyan, made use of the defining vocabulary term yānxī 奄息, which has only one meaning (“rest”), to define xīyi.
monosyllabic base form for the corresponding fission reduplication form in some cases. The list in (10) below shows some examples of this sort.

(10) Fission reduplication forms without identification of the monosyllabic base
a. jiling 鼓令 *tsak? rây's > EMC tsiajk liaj^n 'waftail' (Shijing)
b. yĩyǐ 意苡 *?èk lèy? > EMC ?ik ji' 'Job's tear' (Lunheng)
c. qúyù 鷸鷹 *gwat lák^n > EMC guâ juawk, 'myna', (Chunqiu, Zhouli)
d. wūlōu 屋漏 *?ák^n ráuś/rák^n's > EMC ?ewk ləw'h 'the north-west corner inside the room' (Shijing, Erya)
e. qúlūè 雲霧 *gây rák > EMC giâ liak, 'mayfly, Ephemerida', (Shuowen)
f. guīying 雛鷹 *gwâj lâŋi > EMC giwi jiaŋ 'scold' (Fangyan)
g. wūzé 鳳鶴 *?ây Irák > EMC ?o draîk, 'pelican' (Erya)

48 Ancient Chinese even created four names for the four inside corners of the room; that is, yi 宜 *lêy > EMC ji'ji 'the north-east corner inside the room' (Shuowen, Erya), yào 噩 *?jaws > EMC ?aw'h 'the south-east corner inside the room' (Yili, Xunzi, Erya), āo 奥 *?ék's > EMC ?aw'h 'the south-west corner inside the room' (Lunyu, Han Feizi, Erya), and wūlōu 屋漏 *?ák^n ráuś > EMC ?ewk ləw'h 'the north-west corner inside the room' (Shijing, Erya). In considering the phonological shapes of these four words, a prominent asymmetry to be recognized among them in that the last one, wūlōu, is a disyllabic form while all the other three are monosyllabic ones. We are thus motivated to pay more attention to this disyllabic form. On one hand, wūlōu cannot be semantically decomposed. Although Zheng Xuan understands the meaning with recourse to combining the meanings of the two component parts, that is, 'roof' for wū and 'leak' for lōu, Mao Heng and Zhu Xi think this is just a binom with a single meaning (see their commentaries on Shijing 256 Yi 押). On the other hand, wūlōu presents some phonological properties belonging to fission reduplication form such as the liquid onset *l- in the second syllable and two different rhymes. Thus, we are attracted to the hypothesis that this disyllabic form derives from fission reduplication. By applying the phonological rule of fission reduplication in a reverse direction, we can obtain a monosyllabic form through combination of the initial of wū (*?ák^n) with the rhyme of the second syllable lōu (*râuś). This monosyllabic form is *?âuś. In the OC lexicon, there does not seem to be a word with this pronunciation which is related in meaning with wūlōu (*lák^n *râuś). However, what is enlightening for this problem is that *?âuś is phonologically related with yào 噩 *?jaws and āo 奥 *?ék's. Given this fact, *?âuś quite possibly represented a real word whose meaning was related with that of wūlōu (*lák^n *râuś). Consequently, though we cannot pinpoint the monosyllabic base, we still feel reasonably sure that wūlōu is a fission reduplication form.
From the semantic point of view, none of these disyllabic forms can be decomposed. From a phonological point of view, however, it is found that the second syllables consistently present liquid initials (*l- or *r-), a simple rhyme appears in the first syllable, e.g., (10a,b,d), and the first rhyme corresponds in some way to that of the second syllable (note that the rhyme of the second syllable equals that of the base syllable). These phonological properties are generally recognized in the case of fission reduplication as demonstrated in the nine examples, as already illustrated in this section. Nevertheless, if we treat them as fission reduplication forms just on the basis of these similar properties, we will unwittingly count in some forms which are not products of fission reduplication since this treatment reflects a loose definition which does not go into phonological detail, especially in the first rhyme of the disyllabic form. In fact, to confirm a

49 Guo Pu (276-324) regards tidíé 蒟荚 as two synonyms but Xu Shen (58-148?) and Duan Yucai (1735-1815) thought of this as a disyllabic word.

50 This form is written as 菱莓 in Hanshu. But Yan Shigu (581-645) said it was also written as 擢莓 in another version of Hanshu.

51 The original monosyllabic base for this fission reduplication form was probably mào 職 *mAù > EMC mawh, which means ‘presbyopia’ in Zhuangzi. A slight problem is that the lōu 瓊, the second syllable of the fission reduplication form, has no post-coda -s.
fission reduplication case, it is necessary to take this property into account. As shown in the cases of MC and modern dialects, the rhyme of the first syllables presents a strong regularity - cutting the ending or keeping fixed melodic elements. In view of this, we should be able to find some regulated properties in the first rhyme in the OC case. If we really can find this kind of regularity, then, it will definitely be helpful in deciding whether the disyllabic forms seen in (10) and the above nine examples are products of fission reduplication. Of course, such an approach is not just devised for conforming these concrete examples, it also pursues a better understanding of how OC fission reduplication operates. This is the major topic of the next section.

3.1.5. The rhyme of the first syllable in OC fission reduplication forms

Concerning the phonological component of OC fission reduplication, what we have principally paid attention to in the above discussion is actually the restoration of the monosyllabic base through the combination of the initial of the first syllable with the rhyme of the second syllable. In addition, the necessity of the liquid initial in the second syllable was revealed. I have also found that there are some constraints on the first rhyme of the disyllabic form but I have not gone into details. Now, our discussion will stress this issue.

OC fission reduplication, basically the same as in MC and modern dialects, can be considered a process in which the original monosyllabic base is fissioned into initial and rhyme which occupy both halves of a new disyllabic form. Nevertheless, from the point of view of this morphological process, as pointed out in Chapter One, we argue that during this process there is an incipient stage in which the monosyllabic base is duplicated as two identical syllables; what follows after this initial stage is further phonological modifications depending on the reduplication pattern (the complicated causes underlying the different modifications will be given in Chapter Four below). As far as fission reduplication is concerned, this kind of phonological modification actually takes place in two positions: one is the initial of the second syllable of the fission reduplication word, which has been empirically shown to be a liquid (the theoretical account for this liquid will be given in Chapter Four below), and the other one is the rhyme of the first syllable, which we will now investigate. The following discussion will present an observation on this rhyme, then an explanation, or hypothesis will follow. It should be noted that the face values of the second rhyme in a fission reduplication word are identical to that of the original monosyllabic base, as well as the assumed first rhyme in the incipient stage during
this generative process; therefore, the comparison of the surface rhyme of the first syllable with that of the second syllable (or the rhyme of the base syllable) crucially amounts to the comparison of the assumed rhyme of the first syllable at the incipient stage of the process.

Recalling that the rhyme of the first syllable consistently presents a glottal stop coda in MC (7) and modern Jin dialects (4-6), and deletion of the coda consonant in the Fuzhou dialect (2) and Shunping Mandarin (3), now let us have a look into those nine OC examples discussed above and the examples in (10). For the sake of convenient reference, these nine forms are repeated in (11) below.

(11)

<table>
<thead>
<tr>
<th>original base syllable</th>
<th>disyllabic fission reduplicated words</th>
<th>original base syllable</th>
<th>disyllabic fission reduplicated words</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *dąu 頭</td>
<td>*dąkʰ ráu 體</td>
<td>e. *xát 歇</td>
<td>*xål làts 戲泄</td>
</tr>
<tr>
<td>b. *dzèj 茨</td>
<td>*dzèkʰ rèj 茨</td>
<td>f. *gjáp 抿</td>
<td>*gåy tjåp 胡蝶</td>
</tr>
<tr>
<td>c. *kākʰ 揽</td>
<td>*kāu rákʰ 鏤</td>
<td>g. *lwåt 悅</td>
<td>*låw lwåt 搖悦</td>
</tr>
<tr>
<td>d. *gwák 鑶</td>
<td>*gwåy rák 恆落</td>
<td>h. *pjåw 嬋</td>
<td>*påy låw 扶 (夫) 搖</td>
</tr>
</tbody>
</table>

In comparing the first rhyme of the disyllabic form with its counterpart in the second syllable, it is found that their main vowels are always the same, and basically so is their syllable type (i.e., Type A and Type B, which are expressed by ‘ and ‘ over the main vowels respectively). The identity with respect to the main vowel including the prosodic feature exhibits distinctive characteristics in OC which is generally not attested in the MC and modern cases. Thus, we have to add this constraint to the process creating the first rhyme of a fission reduplication word in the OC case.

Apart from this feature of the main vowel, another characteristic to be generalized for this rhyme is the nature of its simplification. As has been preliminarily demonstrated above, this rhyme has a strong tendency to become simple, almost always keeping a -VC rhyme. Thus such original post-codas as *-s and *-ʔ and the “medial” *-j- are never realized in this rhyme – the presence of the “medial” *-w-, cf., (10c,f,m,p,r), is possibly explained with recourse to the

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52 Only a few examples are exceptions to this prosodic identity, i.e., (10l,n,o).
asymmetry with which -j- is possibly incorporated into the rhyme while -w- is possibly incorporated into the initial.

After accounting for the “medials”, main vowel, and post-coda of this rhyme, what is left is the coda. This is the most difficult phonological issue in dealing with OC fission reduplication. As mentioned before, there is a corresponding relationship between the surface coda and the original coda (represented by the coda of the second syllable or base syllable). Now I shall look into how to understand this correspondence and how this correspondence is realized. However, before trying this, let us first think about another possibility.

Because there is only one mora contained in the first rhyme of a fission reduplication word in the MC and modern cases, one may speculate that the first rhyme in an OC fission reduplication word is also monomoraic and the coda does not actually represent any real phonetic value – OC syllables are minimally of the form CVC, but the emergence of the unmarked possibly gets the unmarked CV syllable realized in this particular position in order to satisfy some requirement of fission reduplication. In following this speculation, we simultaneously have to admit that when the ancient Chinese recorded these temporary CV syllables into texts, what they did was to employ characters which were normally pronounced in a form of CVC syllable. For example, the meaning “butterfly” in OC is denoted by the fission reduplication word *gá ljáp (assumed); since there was no suitable character available for the first syllable *gá (assumed), they had no choice but to use the character hu 胡 (*gáy), which was similar in sound to the actual sound *gá (assumed). This is a potentially, satisfactory hypothesis. If this hypothesis can be proven tenable, then we can simply ignore all the codas of the first syllable in the fission reduplication forms, thereby presenting an OC fission reduplication pattern which is roughly the same as the case attested in modern Fuzhou and Shunping dialects. Unfortunately, this hypothesis cannot be maintained. Assume that the first syllable of the fission reduplication word is actually of the form CV in OC, and therefore this assumed CV syllable should have a different reflex in comparison to the syllable expressed by its OC graphic representative in terms of modern pronunciation. That is, to take húdié 蝴蝶 (*gáy ljáp ‘butterfly’) as an example, if the word hú 胡 (meaning ‘dewlap; non-Han nationalities living in the north and west in the ancient times; why”) and the first syllable of the disyllabic word húdié 蝴蝶 (meaning ‘butterfly’) were

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53 See McCarthy and Prince (1994) and Alderete et al. (1999). I have presented a quotation about the emergence of the unmarked in the footnote in Chapter Two above.
differently pronounced in OC, then, they should not be identical with respect to their modern pronunciations\(^{54}\). Yet they are all identical in modern pronunciation (cf., Beijing 1989a:126 and Beijing 1964:56), after all. This fact shows that they developed from the same phonological origin. Thus we can see that there is no difference between the real pronunciation of the first syllable in question and its graphic representative (character/syllable). Given this fact, it is not allowable to ignore the coda of the first syllable of the OC fission reduplication words; in other words, the coda in question represents a real OC phonetic value.

Now that the hypothesis of ignoring the coda is untenable, let us take these codas at face value to try to make some generalizations concerning their common phonological properties and a certain relationship with their counterpart in the rhyme of the second syllable.

In focusing on the codas seen in (10,11), we find that they are either voiceless stops or voiced glides, and they are never nasal stops. In terms of the traditional classification for Chinese rhymes, it can be seen that only yín rhyme (end with either glide or zero) or rù rhyme (end with voiceless stop) possibly occur in the first syllable and yáng rhyme (end with a nasal stop) cannot do so. Our question is, how the shape of the first rhyme in the OC case is determined. This is the major question I shall deal with now.

To answer this question, the first rhyme is compared with the second one in a fission reduplication form. As pointed out above, the surface rhyme of the second syllable can be considered to be identical with the underlying rhyme of the first syllable, from which the surface rhyme of the first syllable is generated. Thus, the comparison of the first rhyme with the second rhyme makes it possible for us to see how the first rhyme is underlingly derived or phonologically modified.

In accounting for the derivation of the first rhyme in line with this kind of comparison, what is found is that the first rhyme is always the same as the second rhyme with respect to their main

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\(^{54}\) Húdíé 胡蝶 is a common colloquial word, which is certainly a continuant form diachronically developed from OC to modern Chinese dialects; in other words, it is definitely not true that modern Chinese people know how to articulate the first syllable of this disyllabic word because they know the pronunciation of the Chinese character hú 胡. In contrast, there are really some cases in which modern people know the pronunciation of a form only because they recognize the Chinese character, the graphic representative of that form. For instance, there is a fission reduplication word, húlián 璟巒 *gây rân? > EMC yo lian’ ‘kind of sacrificial vessel’, which occurs in Lunyu. Since this form is not a diachronically continuant form and it cannot be found in modern colloquial language, that people know the
vowels and they always differ with respect to their codas. This fact clearly shows that the modification actually occurs in the coda position during the derivation. Under these conditions, the comparison of the two rhymes naturally comes to focus on their codas. As mentioned above, the codas at first do not seem to present any similarity, but further observations in terms of secondary articulation or distinctive features reveals the same general correspondence between them. In reviewing (10a-j, 11a-e), we get a correspondence as seen in (12) below.

<table>
<thead>
<tr>
<th></th>
<th>the rhyme in the first σ</th>
<th>rhyme in the second σ (= the rhyme of the base σ)</th>
<th>the rhyme in the first σ</th>
<th>rhyme in the second σ (= the rhyme of the base σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>-āk♂</td>
<td>-āq</td>
<td>h.</td>
<td>-ēk♂</td>
</tr>
<tr>
<td>b.</td>
<td>-ēk♂</td>
<td>-ēj</td>
<td>i.</td>
<td>-ēk♀</td>
</tr>
<tr>
<td>c.</td>
<td>-āq</td>
<td>-āk♂</td>
<td>j.</td>
<td>-ēk♀</td>
</tr>
<tr>
<td>d.</td>
<td>-āk♂</td>
<td>-ā♀s</td>
<td>k.</td>
<td>-ā♀</td>
</tr>
<tr>
<td>e.</td>
<td>-ēk♂</td>
<td>-ā♀s</td>
<td>l.</td>
<td>-āl</td>
</tr>
<tr>
<td>f.</td>
<td>-ēj</td>
<td>-ā♀j</td>
<td>m.</td>
<td>-ēk</td>
</tr>
<tr>
<td>g.</td>
<td>-ēj</td>
<td>-ēk♂</td>
<td>n.</td>
<td>-ā♀</td>
</tr>
</tbody>
</table>

Looking at (12a-j), it is found that the codas in each pair are related to each other through the secondary articulation on one coda or both. In (12a), for instance, the coda of the second syllable is a labial-palatal glide -q and the corresponding coda in the first syllable is -k♂, a labial-palatalized velar stop. The two codas are of course not the same but the secondary articulation -u makes them closely related. This kind of relationship is also recognized in (12c); yet the codas -k♂ and -q are placed in the opposite coda position in comparison with those in (12a). In (12e) the secondary articulation -j appearing on both codas shows their correspondence; in addition, -k and pronunciation is possibly because they know those two characters. We cannot take this kind of form as an example to develop an argument for the present purpose.
-ŋ themselves are already related since they both have the place feature DORSAL. The close relationship between the codas of each pair in (12k-n) can be only recognized by means of an analysis of distinctive features. Looking at (12k,m,n), we can see a -ŋ/-k (or -k/-ŋ) distinction in their coda positions. It should be noted that -ŋ here represents the IPA form -ṵ, a velar glide. In terms of distinctive features, it is found that -k and -ṵ share the place feature DORSAL.

The close relationship attested in the coda position shows that there is no great change during the derivation of the first rhyme. Furthermore, as we will see below, this change actually operates minimally in terms of the OC rhyme system. Thus it can be assumed that there is a rule which obligatorily requires a modification for the underlying form of the first rhyme (= the second rhyme) and defines this modification in shape. I call this rule Minimal Modification, seen in (13) below.

(13) Minimal Modification:

The first rhyme must be minimally modified.

This rule has two basic components: one is that the rhyme must be modified and the other one is that such a modification must be achieved minimally. Obviously, it is very easy to judge a case with regards to the former requirement; all that must be done is to discover whether the two rhymes are identical or not. In contrast, it is not very easy to judge a case with regards to the latter requirement. Consequently, our discussion naturally focuses on how to define “minimum” in terms of this rhyme modification. To achieve this purpose, we need to consider the OC phonological system, in particular, the rhyme system.

In referring to the OC rhyme system (cf., the table in (11) in Chapter One), one prominent property among those rhymes is that they are classified as yīn, yáng, and rǔ, depending on whether they ended in (a) a glide or liquid (ten rhymes), (b) a nasal (ten rhymes), (c) voiceless

55 The post-coda -s in the second syllable does not have any counterpart in the first syllable. This is actually an ideal asymmetry. The explanation that we have come up with is that the reduplicant (the rhyme of the first syllable in this case is a reduplicant) tends to become simple in terms of prosody.

For such place feature as DORSAL, see the feature geometry at the end of Chapter One.

56 This rule is triggered by the interaction between morphology and phonology. I shall return to this issue in Chapter Four below.

57 According to Luo and Zhou (1958), there is an OC rhyme called ji 祭, which gave rise to departing tone (qūshēng)
stop (eleven rhymes). Moreover, each rhyme could correspond to two other (one in some cases) rhymes in line with this trichotomic classification, and these three (two in some cases) rhymes constitute a rhyme category. We can find a complete table reflecting this system in (11) in Chapter One and here I pick up just two rhyme categories as examples.

(14) yīn rhyme  yáng rhyme  rù rhyme
    a.  -āj   -āŋ   -ēk   (= (11VI) in Chapter One)
    b.  -ēŋ   -ēŋ   -ēk   (= (11VII) in Chapter One)

The establishment of these rhyme categories is much more than a neat arrangement for an easy understanding of the OC rhyme system. In fact, the reason why we can arrange the three rhymes into one category is that they are similar in terms of the perception of sound from the point of view of xiéshēng and rhyming practice. In a xiéshēng series, it is found that some characters can serve as phonetic elements in combining characters (syllables) whose rhymes could be yīn, yáng, or rù rhyme. Some examples are shown in (15) below. It should be noted that dash "----" indicates that there is no such character of which the phonetic element (shēngfù 聲符) is the same as other characters in terms of categories I, II, or III, and of which the pronunciation corresponds to other characters in terms of the rhyme category.

(15)

<table>
<thead>
<tr>
<th></th>
<th>phonetic element</th>
<th>I. character (σ) with yīn rhyme</th>
<th>II. character (σ) with yáng rhyme</th>
<th>III. character (σ) with rù rhyme</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>寺*¬óγ</td>
<td>持*¬óγ</td>
<td>等*¬óŋ</td>
<td>特*¬ók</td>
</tr>
<tr>
<td>b.</td>
<td>斤*¬óŋ</td>
<td>顱*¬él</td>
<td>芹*¬óŋ</td>
<td>----</td>
</tr>
<tr>
<td>c.</td>
<td>亥*óγ</td>
<td>孩*óγ</td>
<td>----</td>
<td>核*¬ók</td>
</tr>
<tr>
<td>d.</td>
<td>是*¬áj</td>
<td>提*¬áj</td>
<td>----</td>
<td>提*¬ék</td>
</tr>
<tr>
<td>e.</td>
<td>叔*¬ék&quot;</td>
<td>椒*¬éw</td>
<td>----</td>
<td>淑*¬ék&quot;</td>
</tr>
</tbody>
</table>

reflex in Middle Chinese. In accordance with our reconstruction, all syllables in this OC group end with *-t and thus this OC rhyme should be treated as a rù rhyme.

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In OC rhyming practice, a parallel case that comprises the same implication is also recognized; that is, some different rhymes could rhyme together. Some examples from the *Shijing* are given in (16) below.

(16)

<table>
<thead>
<tr>
<th>yīn rhyme</th>
<th>yáng rhyme</th>
<th>rǔ rhyme</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 笔 *-aws/-akˇs</td>
<td>----</td>
<td>樂 *-akˇ</td>
</tr>
<tr>
<td>b. 菊 *-ay,攻 *-ay/aks</td>
<td>----</td>
<td>擬,懶 *-aks</td>
</tr>
<tr>
<td>c. 遺 *-els,摧 *-el</td>
<td>敦 *-en</td>
<td>----</td>
</tr>
<tr>
<td>d. 膀 *-ey</td>
<td>----</td>
<td>異 *-ek(s)</td>
</tr>
<tr>
<td>e. 暴 *-aw,造 *-aws/-akˇs</td>
<td>----</td>
<td>覺 *-ekˇ</td>
</tr>
<tr>
<td>f. 瘟 *-aq</td>
<td>----</td>
<td>裕 *-ak(u)</td>
</tr>
</tbody>
</table>

The basic principles accounting for the connections implied in (15) and (16) were of course not set up by ancient people. These principles were summarized in later times; Chinese scholars, especially Qing scholars, studied the rhymes of the *Shijing* and established a classification which later scholars followed or modified. Furthermore the rhyme categories to a considerable degree also apply to xiéshēng. This is the empirical basis on which we work. However, from the point of view of ancient Chinese, the question is, why could they use identical phonetic elements for different xiéshēng characters (syllables) whose rhymes were not identical and why could they make different rhymes rhyme together? The only possible answer is that the rhymes were similar in perception of sound to one another; that is, ancient Chinese put them together, either in xiéshēng or in rhyming practice, simply because their ears told them these rhymes were quite close. It is due to this kind of evidence that scholars in the field are able to arrange the OC rhymes in terms of rhyme categories consisting of yīn, yáng, and rǔ rhymes. Scholars are always trying to capture this striking similarity during their reconstruction of the OC system; none of them has failed to try to reflect such a similarity in his reconstruction system. As expected, the OC rhyme system adopted here has taken account of this particular correspondence among the three rhymes of one rhyme category; thus we can see how nicely the categorized rhymes in (14,15,16) have been given phonological value. In short, much evidence has built a solid base on which the notion of correspondence among three rhymes of one rhyme category has been
established. Thus we can see that a rhyme is more similar to the other two rhymes within the
same rhyme category, in comparison with rhymes from other rhyme categories.

Now let us refer back to the Minimal Modification seen in (13), in which it is stated that the
first rhyme must be minimally modified in fission reduplication words. In keeping this in mind,
and simultaneously in view of the conclusion just made, the underlying form of the first rhyme
(note that this underlying form amounts to the surface form of the second rhyme) is supposed be
realized as a form which comes from the same rhyme category. This is just the case that has been
preliminarily recognized. Reviewing the data in (12) above, it was found that the paired rhymes
always come from the same rhyme category. For instance, in (12a) the first rhyme *-ák[^1] and the
second rhyme *-āt[^1] (considered as the underlying form of the first rhyme) all come from
category X in (11) in Chapter One above. This bears out the fact that the way of generating the
first rhyme could be properly marked with “minimal modification”; thus it can be seen that the
rule stated in (13) is a good generalization for this derivative process.

Nevertheless, there are still some factors regarding this derivation which cannot be
accounted for without a further explanation. As we know, the rhyme categories, in most of the
cases, are composed of three corresponding rhymes in terms of yīn, yáng, and rú. Under this
condition, if one of them has been specified as the underlying representation in this derivation
process, the problem we have to face is by what means is the choice made between the two
other. In accordance with the rule Minimal Modification, the winner in this selection should be
the one which is the most similar in sound to the underlying form. Let us have an analysis of
distinctive features to see if we can make an applicable generalization for solving this problem.
Since the main vowels of these three rhymes are always the same, our attention, then, naturally
focuses on their different codas. Recall that the trichotomic classification of all OC rhymes are
actually dependent on their codas, and consequently, it can be seen that the codas in each of the
classes yīn, yáng, and rú share the same values for many distinctive features. Thus we can
generally treat the codas in one class as a whole in distinctive feature analysis.

\[\text{(17)}\]

<table>
<thead>
<tr>
<th>distinctive features</th>
<th>codas in yīn rhymes</th>
<th>codas in yáng rhymes</th>
<th>codas in rú rhymes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(l, j, y( u), w, ū)</td>
<td>-/+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>[consonantal]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Having generalized this table by calculating the number of identical values for features, if we believe that more identical values between two kinds of codas indicate that these two codas are more similar, then we can get a ranking with regard to the similarity seen in (17). Note that the sign >> means “is closer than” and the parenthesized number indicates the number of identical feature values between two kinds of codas.

(18) Codas in yáng rhymes: codas in nü rhymes (3) >> codas in yīn rhymes: codas in yáng rhymes (2.5) >> codas in yīn rhymes: codas in nü rhymes (1.5)

Surprisingly, what is shown by this ranking is actually just the opposite of what is found in a number of cases. In reality the codas between yīn and nü rhymes have formed the closest relationship. In xiéshēng and rhyming practice, as instantiated in (15,16), though there are some connections between the codas of yáng and yīn (or nü) rhymes, such connections are much more frequently attested between the codas of yīn and nü rhymes. Since rhyming and xiéshēng connections reflect people’s auditory impression, we can see that there is a discrepancy between auditory impression and feature analysis summarized in (17) and (18). With further consideration, it is found that there is a problem rooted in this feature analysis. One mistake is that we cannot judge the closeness of sound by means of a mechanical calculation of feature-elements. Of course, if such a calculation could show an overwhelming majority of identical values for features, that would achieve a real judgement. The close numbers like those seen in (18) have less explanatory power for the present purpose. More significantly, we should not treat all features in an indiscriminate way; in particular, it is natural that the feature [nasal] should stand out from other features since it is articulated in nasal tract while most of the other features are articulated in the oral tract. Given this essential distinction, segments with the feature-element [+nasal] and that with the feature-element [-nasal] are supposed to be quite different in terms of sound formation, even though they may share many other features. I think this is the
fundamental reason why the feature analysis seen in (17) and (18) does not match the auditory impression. Thus we have to admit that rhymes with glide codas (yǐn) and voiceless stop codas (rù) are quite close while they are quite different from rhymes with nasal codas (yáng).

With such an understanding of the relationship among yǐn, yáng, and rù rhymes with respect to their closeness, it is easy to see how the first rhyme is generated in accordance with Minimal Modification. Look at (19) below.

(19) First rhyme generation in OC fission reduplication (the subscribed letter indicates the identity with respect to the rhyme category; the asterisk * indicates no such case.)

<table>
<thead>
<tr>
<th></th>
<th>rhyme in the 1st syllable</th>
<th>rhyme in the 2nd syllable (=the underlying form of the first rhyme)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>yǐn rhyme&lt;sub&gt;x&lt;/sub&gt;</td>
<td>rù rhyme&lt;sub&gt;x&lt;/sub&gt;</td>
</tr>
<tr>
<td>b.</td>
<td>rù rhyme&lt;sub&gt;y&lt;/sub&gt;</td>
<td>yǐn rhyme&lt;sub&gt;y&lt;/sub&gt;</td>
</tr>
<tr>
<td>c.</td>
<td>yǐn/rù rhyme&lt;sub&gt;z&lt;/sub&gt;</td>
<td>yáng rhyme&lt;sub&gt;z&lt;/sub&gt;</td>
</tr>
<tr>
<td>d. *</td>
<td>yáng rhyme&lt;sub&gt;w&lt;/sub&gt;</td>
<td>yǐn/rù rhyme&lt;sub&gt;w&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

In (19a,b) the generation only operates between yǐn and rù rhymes. This is a case of Minimal Modification since these two rhymes have been proven quite similar in terms of the perception of sound. In (19c) it is found that the underlying rhyme, a yáng rhyme, turns out to be a yǐn or rù rhyme. Because a yáng rhyme is quite different from the corresponding yǐn or rù rhyme, this is a modification of considerable degree. However, since there is no other choice, (19c) should not be treated as a case against Minimal Modification.

I have given an account of how the first rhyme of a fission reduplication word is generated, showing that this derivation process can be marked with Minimal Modification, which always operates with the minimal degree of change in order to achieve the highest degree of closeness in sound. To provide more details of this process, let us examine how it is realized from the point of view of distinctive features. Put simply, what we can find is that the place features such as LABIAL, CORONAL, and DORSAL (cf., (16) in Chapter One) are always preserved, and it is those non-place features such as [sonorant], [consonant], [continuant], [approximant], [voiced], and [nasal] which undergo change. This phenomenon can be recognized in the examples in (11) above. For instance, in (11d) during the derivation of *-áy(áu) from *-ák, the non-place features
such as [voiced], [sonorant], [consonant], [continuant], and [approximant] have been changed, but the place feature DORSAL is preserved. Thus it can be seen that place features are more stable in this morphological process. A fuller account of such a stable/unstable distinction between place features and non-place features must be left for another occasion.

The above discussion has set a standard for the derivation of the first rhyme by proposing the rule Minimal Modification; this rule can be interpreted as the “least degree of change” from the underlying form to the corresponding yIn or ruhyme. Nevertheless, there are some cases in which the disyllabic forms look quite like fission reduplication words with regard to many other requirements, but they do not seem to accord with Minimal Modification in terms of the first rhyme – what is realized in the first rhyme position in these cases is actually a yIn or ruhyme which does not correspond to its underlying form (=the second rhyme) in terms of the same rhyme category. Let us first review a group of examples of this kind, as seen in (20). The reader can refer back to (10,11) for detailed information about each example.

(20)

<table>
<thead>
<tr>
<th></th>
<th>1st rhyme</th>
<th>2nd rhyme</th>
<th>1st rhyme</th>
<th>2nd rhyme</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>húdié 蝴蝶</td>
<td>-ǎy</td>
<td>-áp</td>
<td>e. mǔlóu 棘妻</td>
</tr>
<tr>
<td>b.</td>
<td>húliān 瑚琏</td>
<td>-ǎy</td>
<td>-ân?</td>
<td>f. fúróng 芙蓉</td>
</tr>
<tr>
<td>c.</td>
<td>húlā 狐刺</td>
<td>-ǎy</td>
<td>-ât</td>
<td>g. fúyáo 扶搖</td>
</tr>
<tr>
<td>d.</td>
<td>huáli 華離</td>
<td>-ǎy</td>
<td>-âl</td>
<td></td>
</tr>
</tbody>
</table>
Modification rule fails to apply, -ay is automatically realized. Though a well-defined default rule has not been worked out, some evidence strongly supports this proposal. One piece of evidence in favor of this proposal is that -ay really serves as a default form in one verifiable case. Looking at húdié 胡蝶 (20a), we can see that since the underlying form for the first rhyme is -áp, according to Minimal Modification, it should give rise to a corresponding yín rhyme such as -áβ, -áv, or -áu. However, none of these forms exist in the OC rhyme inventory and in fact -áp does not have any corresponding yín rhyme at all (cf., (11) in Chapter One). Under this condition, -áy arises in that position. This behavior shows that -áy behaves as a default form.

The occurrence of -áy as a default form could be accounted for by bringing in a distinctive feature analysis. There are in total five codas, -γ(q), -l, -j, -w, and -τ, which follow the main vowel -a- in OC yín rhymes (cf., (11) in Chapter One). In comparing these five codas with -a- in terms of distinctive feature, it is -γ(q) that shares the most identical feature-elements with -a-. In examining this point, it is easy to get rid of the lateral -l since it has the place feature CORONAL while -a- does not (-a- has the place feature DORSAL). The codas -w and -τ have the place feature LABIAL (probably as well as DORSAL) which is not possessed by -a-. They also have terminal-feature-elements [+high] which is opposite to -a-. The coda -j and -a- are significantly distinguished from one another due to their contrasting value for such features as [high], [low], and [back]. As for the coda -γ(q), apart from its feature-elements shared by -a- with regard to non-place features, it also shares the place feature DORSAL with -a-. Besides, this terminal-feature-element [+back] further shows its close relationship with -a-. Thus we can see that γ(q) is the most similar to -a- among the five relevant codas. Consequently, it can be seen that the combination of -a- with -γ(q) presents the highest degree of agreement. This argument supports the treatment of -ay(-aui) as the default rhyme during OC fission reduplication.

The examples in (20b-g) are not exactly the same as húdié 胡蝶 since the corresponding yín or rú rhymes are available in the OC rhyme inventory. However, if -ay(-aui) could be accepted as a default form in the first rhyme position, it is not impossible for them to make use of it. One supporting piece of evidence can be found in the case of Shunping Mandarin. In this dialect, the basic derivation process for the first rhyme of a fission reduplication word is to cut off the coda, similar to what happens in the Fuzhou dialect. Simultaneously, it is found that the schwa ə
serves as the first rhyme in fission reduplication forms irrespective of the corresponding underlying form. Thus we can see that a general derivation rule and a default rule can coexist in fission reduplication. By the same token, it is also possible for OC fission reduplication to employ two processes in realization of the first rhyme.

To sum up, I have made a detailed description about the derivation of the first rhyme in fission reduplication words. Simply from the point of view of the restoration of the monosyllabic base from the disyllabic form, the first rhyme does not seem to play a role. Nevertheless, the fission reduplication is a morphological process, we have to give a linguistic account of the first rhyme to properly understand this whole process. On the other hand, only when we get a clear understanding of this process, is it possible to get rid of the cases which seemingly involve fission reduplication but actually do not.

3.1.6. Fission reduplication and the theory of dimidiation

Fission reduplication and dimidiation are two kinds of language processes which both involve a change of one syllable to two syllables. How they are related and distinguished is the topic of this section.

Dimidiation, first explicitly identified by Boodberg (1937), and developed in Boltz (1974, 1994), refers to a bisyllabification of a word originally having an initial consonant cluster \( C_1C_2 \) such as when \( C_1 \) becomes the initial of the first syllable and \( C_2 \) the initial of the second. For instance, the disyllabic word bùlù 不律 \( *pêY \) rwêt > EMC puw lwit ‘writing brush’ (Erya) actually derives from dimidiation of the monosyllabic form bǐ 筆 \( *prêt \) > EMC pit ‘writing brush’ (Zhuangzi, Erya). \( *prêt \xrightarrow{\text{dimidiation}} *pêY \) rwêt.\(^{58}\) This bisyllabification, or dimidiation, is achieved through vocalic epenthesis between the two consonants of the initial cluster, thus \( *pr- > *p-r-; \) the monosyllabic word bǐ 筆 \( *prêt \) eventually became a disyllabic word bùlù 不律 \( *pêY \) rwêt.

From this brief introduction, we can see that dimidiation is actually a pure phonological process which attempts to preserve the original sounds when the language no longer allowed consonant clusters in the onset position of a syllable. It is a historical linguistic phenomenon that

\(^{58}\) Takashima (1998) also takes this as “a good example of dimidiation".
occurred in the Later Old Chinese in which this constraint on the syllable template was active. In contrast, though fission reduplication is also a process in which one syllable becomes two syllables, it is not a pure historical phonological process; instead it is a morphologically-motivated phonological process. As illustrated above, it is a specialization in semantic significance which triggers the phonological change of one syllable to two syllables. Besides, as a morphological-phonological process, fission reduplication is not limited to a particular stage of the language and in fact it has been active down to the present. Given these differences, it does not seem difficult to distinguish one process from the other. Crucially, in a case of one syllable becoming two syllables, whether it involves fission reduplication or dimidiation is dependent on the semantic relationship between the original monosyllable and the disyllable. Simply speaking, if both are identical with respect to their semantic significance, it is a case of dimidiation; if both are different with respect to their semantic significance, but still correlative to some extent, it is a case of fission reduplication. We may also try to distinguish these two processes through a phonological component, particularly with respect to the rhyme of the first syllable in a binom. For fission reduplication, I have proposed that the rhyme must be as close (but not identical) as possible to the original rhyme (=the rhyme of the second syllable in the binom). As for dimidiation, Boltz (1994) has made a proposal of assimilation for the first syllable; thus the two rhymes in such a binom will be identical. Nevertheless, we do not know whether such an assimilation is obligatorily required in dimidiation or not. Assuming it is obligatory, dimidiation should be easily distinguished from fission reduplication in terms of its phonological shape, yet, at the same time, dimidiation would be confused in phonological form with progressive reduplication (cf., Chapter Two). In any event, however, semantic significance always plays an important part in any kind of reduplication, but not in dimidiation.

3.2. Total reduplication

In Chinese, total reduplication basically refers to a kind of reduplication in which no phonological modification is involved, thereby producing two identical syllables (AA) in the case of a monosyllabic base. This is a dominant pattern in OC total reduplication so that we can find hundreds, if not thousands, of examples of this kind throughout the whole period. Given

59 In addition, it seems that we are possibly able to find another pattern labeled AABB, instantiated as in zīzī sūnsūn 子子孫孫 ‘sons and grandsons’ (Shijing). Since these kinds of examples are relatively rare, and since the principle
this, the following discussion will focus on this pattern and illustrate various cases in terms of the kind of semantic implications produced.

3.2.1. Total reduplication with vivid impression

An overwhelming majority of the total reduplication words in OC are used as if they were adjectives with a small number serving as a noun or verb. Examples of this kind can be found in (21).

(21) Total reduplication words in OC
Note: As we will see, it is very hard to give a definition for total reduplication words. Definitions are given after items just for reference. (21a-k) are from the Shijing and (21l,m) are from Xunzi.

<table>
<thead>
<tr>
<th>a. fanfan 反反 ‘cautious’</th>
<th>b. cāocāo 草草 ‘worried’</th>
</tr>
</thead>
<tbody>
<tr>
<td>c. fēifēi 霏霏 ‘(of rain or snow) ‘fall thick and fast’</td>
<td>d. chóngchóng 蟲蟲 ‘steaming’</td>
</tr>
<tr>
<td>e. biāobiāo 儥儥 ‘many’</td>
<td>f. jīnjīn 斤斤 ‘clear’</td>
</tr>
<tr>
<td>g. míngmíng 明明 ‘brightly’</td>
<td>h. èrèr 耳耳 ‘luxuriant’</td>
</tr>
<tr>
<td>i. chūchū 楚楚 ‘luxuriant’</td>
<td>j. jǐngjǐng 景景 ‘very worried’</td>
</tr>
<tr>
<td>k. zhānzhān 湛湛 ‘(dew) thick’</td>
<td>l. tiántián 壭塭 ‘satisfied’</td>
</tr>
<tr>
<td>m. míngmíng 明明 ‘blurring’</td>
<td>n. mōmō 莫莫 ‘quiet’</td>
</tr>
</tbody>
</table>

Much ink has been spilled concerning the nature of these forms. One common understanding is that these forms are mainly used to describe the appearance of something or some kinds of activities and such a description actually produces a vivid image. This understanding may lead underlying this pattern is basically the same as that of pattern AA, I shall discuss some of these kinds of examples as if dealing with the pattern AA, without setting aside a section exclusively for it.

In modern Chinese, adjectives should be regarded as a species of verb (Chao 1968 calls them intransitive verbs of state; Zhu 1982 subsumes both verb and adjective under a single term called wèici 詞詞 ‘verbal word’) since they can be negated by bù 不 and can function independently as predicates; the difference between adjectives and verbs proper is that adjectives can be modified by hěn 很 ‘very’ and verbs proper cannot. As for OC the verb proper and adjective can be distinguished on the basis of their behavior with the verbal auxiliary kě 可 ‘is possible’. Only transitive verbs may follow kě directly, in which case they must be understood as passive. A transitive verb in an active sense, or an intransitive verb requires kěyī 可以. Adjectives, however, require the copula verb wéi 爲 after kěyī 可以. See Pulleyblank (1995a: 23-24)
us to propose that total reduplication is motivated by a desire to express vividness. However, since one kind of progressive reduplication, with a fixed liquid initial in the second syllable, also has the same morphological significance (cf., Chapter Two), the question is, are these two kinds of reduplications the same with respect to their meanings? As a result of investigation, we can see that there is a misunderstanding in observing the semantic component of total reduplication; our attention, then, is naturally drawn to this respect. Thus, our present purpose is to search out what is really expressed by the total reduplication words.

By making an investigation into the source data, it is found that two phenomena are worth taking into account. One phenomenon is that it is quite common for a number of such total reduplication forms to denote just one “meaning”; the other one is that one total reduplication word is possibly used to denote several unrelated ‘meanings’. I shall take those found in the Shijing to illustrate these two phenomena.

According to commentaries on the Shijing made by Mao Heng (Western Han (206 BCE-25AD) scholar), Zheng Xuan (127-200), and Zhu Xi (1130-1200), who are considered the most authoritative commentators in the field, it is found that the meaning of fifty total reduplication words is basically ‘full, grand’ (shèng 盛); that is, the notion of ‘full, grand’ can be expressed in fifty different ways through total reduplication. It is also found that there are twenty-two total reduplication words defined by the word zhòng 衆 ‘many’, twenty total reduplication words by the word dà 大 ‘big’, and twenty total reduplication words defined by the word yōu 憂 ‘worry’. These four typical cases reflect a strange phenomenon; that is, the language employs so many words to signal just one meaning. It is unbelievable for a language to need so many equivalents to express just one meaning or notion.

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61 In some cases, the word shèng 盛 ‘full, grand’ is used as defining vocabulary by combining with other words. A few examples of the fifty total reduplication forms defined by shèng 盛 ‘full, grand’ are: fūfū 浮浮, báobáobáobáo 鳜鮨, fāfā 發發, fūfū 蒲蒲, fēifēi 諳諳, pèngpèng 彭彭, bēngbēng 腰腰, qǐqǐ 起起, ěr ěr 耳耳, cāncān 擔擔, yángyáng 洋洋, zhěnzhěn 擦擦.

62 A few examples of the twenty-two total reduplication forms defined by zhòng 衆 ‘many’ are: jǐjǐ 濟濟, zhěnzhěn 擦擦, lìlì 棘棘, zēngzēng 增增, āçi 腳腳. A few examples of the twenty total reduplication forms defined by dà 大 ‘big’ are: fūfū 著著, tāotāo 滔滔, shāngshāng 湯湯, huānhuān 喧喧, yīyī 一一. A few examples of the twenty total reduplication forms defined by yōu 憂 ‘worry’ are: bīngbīng 佃佃, yùyù 愈愈, cǎocǎo 草草, yáo yáo 搖搖, dǎodǎo 切切. Kennedy (1959) says, “There are 22 different doublets used to describe a condition of the heart, a condition generally taken to be one of sadness.” The result of his counting for the doublets defined by yōu 憂 ‘worry’ is slightly different from mine.
The other phenomenon is that one total reduplication word is possibly used to denote several unrelated meanings. For instance, the total reduplication word yiyi 翼翼 has ten occurrences in the *Shijing*. According to ancient commentaries, this form has four different meanings such as cautious, in good order, strong, and luxuriant. Given the natures of these four meanings, it is very hard to establish a logical relationship among them; thus it is not straightforward to expect that the meanings result from semantic extension. Given this, one might try to explain this phenomenon by resorting to jiajie⁶³, but without concrete evidence it is no more than pure speculation.

These two as yet unexplained phenomena lead us to doubt whether what is denoted by the total reduplication words is really the meaning. When we say that many total reduplication words express one identical meaning or that one total reduplication word expresses many different meanings, the question is, does the word “meaning” denote what we are accustomed to it denoting? As a matter of fact, the so-called “meaning” denoted by the total reduplication words are different from what we normally understand by the word “meaning”.

As is well known, the recognition of the meaning of a word depends on a generalization about a series of uses of the word. For instance, we can say that the English word ‘big’ has the meaning ‘of more than average size, amount, weight etc’ because it is attested in many utterances such as ‘a big apple’, ‘Canada is big’, ‘Your baby is getting big’, and ‘She had a big grin on her face’. Thus it can be seen that the meaning of a word must be able to stand outside of its context⁶⁴; in other words, the meaning of a word should not be dependent on just its particular context. Nevertheless, what we find in the total reduplication words in OC represents the opposite case; that is, their ‘meaning’ is particularly dependent on context⁶⁵. Look at the examples in (22) below.

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⁶³ The term jiajie refers to a linguistic-graphic phenomenon in which graphs originally devised to write one word are later borrowed to represent the sound of another often totally unrelated word. The term Jiajie can also be employed as a noun to refer to characters used in such a way.

⁶⁴ Empson (1951) calls the meaning which is outside of any context the head meaning of a word, as opposed to the chief meaning of the same word in the sentence in question. This distinction is relative to, but not identical to what we are discussing here.

⁶⁵ This has been recognized by Lin Zhitang (1927) and Cao Xianzhuo (1980). Lin Zhitang says, ‘When I read the *Shijing*, I found that the reduplicated characters were much more than those in other texts. Then, I collected them...’
(22) The total reduplication word yiyi 翼翼 in the Shijing (Xiang Xi (1986) sums up the ancient commentaries on this form in four uses, with an instance they occur in the following.)

a. 'strong': Shijing 178: siqi yiyi 四騏 翼翼 ‘his four black-mottled grey horses were orderly’. (Karlgren 1950:122)

b. 'cautious': Shijing 260: xiaoxin yiyi 小心翼翼 ‘he is careful and reverent’. (Karlgren 1950:228)

c. 'in good order': Shijing 210: jiangyi yiyi 疆場翼翼 ‘The boundaries and divisions are (carefully adjusted)’. (Karlgren 1950:164)

d. 'luxuriant': Shijing 209: woji yiyi 我稷翼翼 ‘our glutinous millet is (orderly:) growing in orderly rows’. (Karlgren 1950:162)

The establishment of the four “meanings” for yiyi 翼翼 is dependent on the particular context. In (22a), yiyi 翼翼 is considered to mean strong because what comes in front of it is siqi 四騏 ‘four black-mottled grey horses’ and this line is devised to describe the army provided with chariots full of power and grandeur. Under such circumstances, it does not seem to be harmful to make such an assumption about what is expressed by it. In (22b), the same total reduplication word follows the phrase xiaoxin 小心‘cautious, careful’ (literally meaning small mind), and thus it is said that yiyi 翼翼 means ‘careful’. The same holds true in (22c,d). Now, let us review another case, seen in (23), in which some different total reduplication words are interpreted with the same meaning, just on the basis of the particular context.

(23) Theses five total reduplication words in the Shijing are considered to be similar in meaning:

a. Shijing 101: nanshan cuicui 南山崔崔‘The Southern mountain is craggily high’. (Karlgren 1950:65)

and examined them carefully; it was found that none of them are not dependent on the main words which they are preceded by or which follow them for their meanings.’

66 Zheng Xuan interprets as zhuangjian mao 壮健貌 ‘description of strength’. Karlgren's translation is not in accordance with Zheng Xuan's understanding.

67 Zhu Xi (1130-1200) thought that yiyi 翼翼 meant ‘luxuriant’. Karlgren's translation depends on another kind of explanation.
b. *Shijing* 260: simù yèyè 四 牝 業 業 ‘The four stallions were large, very long and broad’ (Karlgren 1950:230)

c. *Shijing* 189: qìqí huánghuáng 其 泣 嚎 嚎 ‘they cry shrilly’ (Karlgren 1950:131)

d. *Shijing* 241: chóngyōng yányán 重 塬 言 言 ‘the wall of Ch’ung was (hill-top-like=) high’. (Karlgren 1950:196)

e. *Shijing* 204: tāotāo jiānghàn 滔 滔 江 漢 ‘Amply-flowing are the Kiang and Han (rivers)’. (Karlgren 1950:156)

All these five forms, cuīcuī 崔崔, yèyè 業 業, huánghuáng 嚎 嚎, yányán 言 言, and tāotāo 滔 滔, are basically interpreted as dà 大 ‘big’ by the ancient commentators. In association with their contexts, as shown in (23), we can observe that they are considered to have the meaning ‘big’ because what they are preceded by or followed by refer to mountain, wall, crying, stallion, and river respectively, which could be described as something big. Thus we can see that the so-called meaning ‘big’ is no more than a product of speculation based on the context, and there are no series of use of the words in many different contexts to support that these words really have such a meaning.

In addition, we also have a kind of indirect evidence in favor of the view that the sense denoted by the total reduplication words is entirely dependent on the context. Assuming that the total reduplication words have no independent meaning, then from the point of view of later times, the explanation of these words would certainly become a big problem; that is, it would cause much controversy in the explanation of these words and people would be unable to agree or decide which is right in many instances. This is just the case. More than half of the total reduplication words in the *Shijing* have received more than one explanation. For instance, in the *Shijing* 246, one line says wéi yè níni 維 葉 泥 泥 ‘their leaves are luxuriant’ (Karlgren 1950:202), in which the total reduplication word níni 泥 泥 receives such explanations as ‘a description of new leaves’ (Mao Heng 毛 亨 (Western Han scholar)), ‘(of grasses) turning luxuriant’ (Zheng Xuan 鄭 玄 (127-200)), ‘luxuriant’ (Lu Deming 陸 德 明 (550-630)), ‘small and beautiful’ (Kong Yingda 孔 穎 達 (574-648)), ‘soft and bright’ (Zhu Xi 朱 熹 (1130-1200)), and ‘(shoots of) difficult to come up above the ground’ (Hu Chenggong 胡 承 珑 (1776-1832)). All these explanations to some extent contradict one another, but each explanation seems highly applicable with regard to the context. This phenomenon shows that níni 泥 泥 originally does not have an independent meaning, thereby leaving it open for later people to question and
speculate. At the same time, we know that there are some examples such as mingming 明明 ‘brightly’ and guăngguăng 廣廣 ‘spaciously’ which seem independent to some extent, yet even these forms are still dependent on the context. I shall discuss it below.

The above discussion shows that the sense denoted by a total reduplication word is dependent on the context of the word. Under these conditions, the way to understand what the total reduplication word denotes looks very free, especially from the point of view of later times. This is the reason why a number of total reduplication words possibly denote just one “meaning”, why one total reduplication word is possibly used to denote several unrelated ‘meanings”, and why there is so much controversy in explaining a given total reduplication word. More significantly, it is implicitly argued that what is expressed by total reduplication words is not meaning in the usual sense at all.

If what is expressed by a total reduplication word is not meaning in the normal sense, the question is, what does it really express? The answer is that the total reduplication word expresses a kind of vivid impression and it is used to heighten the atmosphere of the scene. As seen in the instances of (22) and (23), those total reduplication words are all attached to other content words or phrases and they are employed to present some kind of descriptive function. As common sense suggests, describing something implies making something concrete, and subsequently vivid. Thus we can see that the function of total reduplication is to produce vividness. On the other hand, these kinds of words do not express any normal meaning, as illustrated above; instead, they just reinforce the atmosphere of the scene. Thus it can be seen that what is produced through total reduplication is a kind of vivid impression.

The parallel in modern Chinese supports our generalization about what is expressed by OC total reduplication words. In standard Mandarin, for instance, there are a number of total reduplication forms which likewise express such a vivid impression. Look at examples in (24).

(24) a. lǜ youyou 绿油油 ‘fresh green’
   b. rè hulu 热乎乎 ‘warm’
   c. yuán liuliu 圆溜溜 ‘good and round’
   d. hóng tongtong 紅通通 ‘bright red’
   e. hóng xixi 紅稀稀 ‘reddish’
   f. bēngbēng cuì 崩崩脆 ‘crackling crisp’

We know that archaic words are usually very hard to define precisely, but no other kind of words causes so much controversy.

How to define the term ‘meaning’ is still at issue. For a thorough discussion, see Lyons (1977).
All of these six total reduplication forms are attached to an adjective. Although it is very hard for Mandarin speakers to explain the semantic significance of these forms in words, they have certainly sensed that these forms convey some kind of information. For (24a), the adjective  looks means ‘green’ and thus we have  绿裙子 ‘green skirt’,  绿漆 ‘green paint’, and  绿叶 ‘green leaves’. Having attached  绿 to the total reduplication form 绿油油, a kind of vivid sense arises, thereby producing a new semantic constraint that does not allow  绿 to be associated with words denoting inanimate things such as skirts and paint, only allowing association with words denoting plants. In (24c), the adjective  圆 ‘round’ expresses the property ‘shaped like a circle’ and no emotional coloring is involved. By contrast,  圆溜溜 has an implication of emotional coloring; that is, something is not only round but also appropriately or favorably round. It should be noted that 绿溜溜 itself does not have the meaning ‘appropriately or favorably’; that it is interpreted in this way is due to its own vivid impression. (cf., Zhu Dexi 1956; Chao (1968:677) calls this kind of form a ‘lively suffix’.) This kind of word already existed in OC. For instance, the Chuci, a collection of poem and rhymed prose, presents forms of this kind, such as  纷众多 ‘numerous and confused’ and  香菲菲 ‘fragrant’. The total reduplication forms 纷众多 and 香菲菲 are attached to the adjective to present a vivid impression.

The above discussion has focused on the revelation of the semantic significance of total reduplication words. Now I shall discuss how total reduplication operates, stressing the relationship between the monosyllabic base and the doublet.

In traditional Chinese linguistics, total reduplication words are recognized as repeated characters (chóngyán 或 diézi 畢字). Referring to the relationship between the single character and the doublet, scholars have found that in some cases there is some kind of semantic relationship and in some other cases such a relationship does not seem to exist. More precise than traditional studies, Kennedy (1959) presents a deep investigation into these forms in terms of reduplication, in which he observes two important phenomena:

1) ... The characters used in doublets are generally most uncommon, so much so that 139 of the 360 characters used thus in the Odes do not occur otherwise than in doublet form. They seem to have been created for this particular construction...
2) ... we have seen, in the “sad heart” series, a profusion of doublets that are supposed to express sadness. But the word ‘sad’ itself, that is to say the syllable
*yōg⁶*, although occurring 82 times in the Odes, is never reduplicated! We could show that all of the descriptive words of frequent occurrence, ‘large’ ‘small’ ‘beautiful’ ‘near’ ‘far’ ‘difficult’ ‘urgent’, etc., never appear in reduplicated form...

Based on this kind of observation, he states that “reduplicated words” are always uncommon, and that common words are never “reduplicated’. Furthermore, he concludes that total reduplication does not exist as a productive process and the doublets should be treated as primary forms.

Kennedy’s observation and conclusion cannot be simply judged “true” or “false’ because of the complex situation. Concerning his observation, as already pointed out in Chapter One above, although it is true that many descriptive words with frequent occurrence are never reduplicated in the *Shijing* or other OC texts, it is also true that there are some common descriptive words such as *gāo* 高, *míng* 明, and *qīng* 青 which actually undergo total reduplication. Since Kennedy has inappropriately taken a part for the whole in this observation, he seems to invite criticism. However, it would be worse to totally miss his main point. In fact, what he stressed here is that common descriptive words are usually not reduplicated while many uncommon words or even isolated forms frequently undergo reduplication. This is a serious question that we cannot evade in explaining total reduplication. Although Kennedy makes a valuable observation, the conclusion he draws from his observation is not acceptable. To get a good understanding of how these doublets are produced, we have to admit that they stem from total reduplication rather than that they reflect a protomorphemic pattern; even for those forms which are apparently not decomposable they should still be regarded as the result of total reduplication in a theoretical sense. The crucial point here is that total reduplication, besides the outstanding feature of its unmodified shape, represents a morphological alternation from the monosyllabic base to the doublet, which is different from that of other types of reduplication. If we stress the morphological component, total reduplication can be described as a process in which the meaning denoted by the monosyllabic base disappears and simultaneously a vivid impression, which potentially has whatever semantic implication the base had, is invented. Furthermore, how the vivid impression is interpreted in practical use is dependent on the utterance which the total reduplication form is attached to. In other words, the total reduplication form just provides a general shape of semantic implication. It is the context that colors in this shape. This analysis is in accordance with the fact that one total reduplication word may vary over a wide semantic range in different contexts. This process can be explained through the formulation seen in (25).
The process of total reduplication in OC

<table>
<thead>
<tr>
<th>phonological component</th>
<th>morphological component</th>
</tr>
</thead>
<tbody>
<tr>
<td>input</td>
<td>monosyllabic base: σ</td>
</tr>
<tr>
<td>output</td>
<td>total reduplication form</td>
</tr>
<tr>
<td>in use</td>
<td>...σσ or: σσ... (^70)</td>
</tr>
</tbody>
</table>

Now I shall verify this proposed process through a demonstration of some concrete cases. Liè 烈 originally meant ‘sharp, piercing’. Total reduplication of this word gives rise to the form lièliè 烈烈, presenting a vivid impression associated with an intensive circumstance. The existence of the association with intensive circumstances indicates, on one hand, that the original meaning of liè still plays a role; on the other hand, that the total reduplication form is actually used in various contexts with different interpretations indicates that the original content meaning has basically withered away. See (26) below for the details.

(26) The total reduplication form lièliè 烈烈 in the Shijing (the Shijing origin is followed by ancient commentaries)

<table>
<thead>
<tr>
<th></th>
<th>Shijing</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>202 liāo'è: nánshān lièliè 南山烈烈</td>
<td>the Southern mountain has peak after peak. (Karlgren 1950:153)</td>
</tr>
<tr>
<td></td>
<td>Mao Heng: zhī nán yè 至難也</td>
<td>‘extremely difficult’; Zhu Xi: gāodà mào 高大貌 ‘description of tallness’.</td>
</tr>
<tr>
<td>b</td>
<td>167 cāiwèi: yōuxīn lièliè 憂心烈烈</td>
<td>the hearts are grieved. (ibid. 111)</td>
</tr>
<tr>
<td></td>
<td>Zheng Xuan: yōu mào 憂貌 ‘description of worrying’.</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>227 shūmiào: lièliè zhēngshì 烈烈征</td>
<td>majestic was the marching host. (ibid. 180)</td>
</tr>
<tr>
<td></td>
<td>Zheng Xuan: wēiwǔ mào 威武貌 ‘description of might and force’.</td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>204 siyüè: dōngrì lièliè 冬日烈烈</td>
<td>The days of the winter are bitterly cold. (ibid. 155)</td>
</tr>
<tr>
<td></td>
<td>Zheng Xuan: yōu lìliè yè 猶栗烈也 ‘same as lìliè (‘piercingly cold’).</td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>304chángfā: rúhuǒ lièliè 如火烈烈</td>
<td>he Zheng Xuan 鄭玄: měng 猛 ‘(of fire)’</td>
</tr>
</tbody>
</table>

\(^70\) The ellipsis dots ‘...’ stand for the utterance, usually composed by two syllables in Shijing, that is immediately preceded by or followed by the total reduplication word.
From these five occurrences, we can see how different the contexts of the lièliè 烈烈 are; they have to be differently interpreted. In (26a) lièliè is used to show a vivid impression of the Southern mountain. This vivid impression of the Southern mountain is difficult to cross over (Mao Heng’s understanding) or that the Southern mountain is very high (Zhu Xi’s understanding). The crucial point is that this expression gives a vivid impression, rather than having a fixed meaning. In the other four cases, lièliè is attached to forms which denote grieving hearts, a marching host, a winter day, and fire respectively. On the basis of different contexts, lièliè is interpreted as a description of worrying, a description of might and force, piercingly cold, and (of fire) raging and roaring respectively. Again, all these interpretations cannot be understood in terms of fixed meaning; instead, they should be understood in terms of a vivid impression since a vivid impression is more suitable to the contexts of the poem, and besides, it is hardly possible that one form could have so many unrelated meanings. At the same time, the interpretation of vivid impression makes it possible to get a natural generalization for all these five impressions, that is, a sense of strength or intensity. This general sense is related to the original meaning of the monosyllabic base liè 烈 ‘blazing, intensive’.

Míng 明 usually means ‘bright; clear’. The total reduplication form míngmíng 明明 is found in such contexts as a) míngmíng shàngtiān 明明上天 (Shijing 207) ‘Bright is the high Heaven’ (Karlgren 1950:259), b) míngmíng zài xià 明明在下 (Shijing 236) ‘Shedding brightness below’ (Karlgren 1950:187), c) míngmíng tiānzi 明明天子 (Shijing 262) ‘bright is the son of Heaven’ (Karlgren 1950:234), and d) zài gōng míngmíng 在公明明 (Shijing 298) ‘in the palace they are very bright’ (Karlgren 1950:254). In example a), shàngtiān 上天, to which míngmíng is attached, is not referring to the natural sky, but the divined Heaven. Subsequently míngmíng, on the basis of the monosyllabic form’s meaning ‘bright’, shows a vivid impression produced when people imagine Heaven. Míngmíng in other cases should also be understood as a vivid impression rather than a normal meaning. In example c), for instance, míngmíng is used to give an impression someone might have when they imagine the son of Heaven. If it is interpreted as having the common meaning such as ‘bright’, as in Karlgren’s translation, the poetic flavor is greatly reduced.

As seen in (25), one change during total reduplication is the degeneration of the meaning of the monosyllabic base. This change has been seen in the above examples, and it will be more
clearly shown in the following example. He 鶴 originally meant ‘crane’. In the total reduplication form hēhē 鶴鶴, this original meaning vanishes; what is simultaneously produced by the total reduplication of this form is a new vivid impression, vaguely associated with cranes. We can find its use in Mengzi, in the utterance bāi niǎo hēhē 白鳥鶴鶴71 ‘the white birds shone glistening’ (Legge 1872 [1995:263]). Since the syntactic position (predicate, which is supposed to explain something in this case) does not allow a noun with its content meaning to appear there, thus we can see that the content meaning of hē 鶴 ‘crane’ is entirely lost. From a Chinese point of view, cranes give impressions such as clean, spotlessly white, tall, (of neck) long, and long life’; which impression actually comes to the fore through the total reduplication form hēhē 鶴鶴, however, will depend on the context. In the sentence in Mengzi, because it is bāi niǎo 白鳥 ‘the white birds’ to which hēhē 鶴鶴 is attached, the vivid impression expressed by hēhē 鶴鶴 is naturally ‘clean and spotlessly white’, as reflected in Legge’s translation.

Among the total reduplication forms, most of the cases do not seem to be as clear as liēliē, mingming, and hēhē; that is, at first glance, these forms are so awkward that they do not seem to have any relationship in semantic implication with the monosyllabic base. Some of them, however, were originally transparent cases, but the apparent difficulty is due to graphic factors. Here are some examples. In the Shijing 167, a line says yǔ xuě fēifēi 雨雪霏霏 ‘the falling snow is thick’. (Karlgren 1950:112) Since there is no evidence to support that fēi 飛 has an independent meaning,72 fēifēi 霏霏, then, looks like a awkward case. However, because fēi 飛 and fēi 飛 are possibly identical in pronunciation73, they may refer to the same word; thus, it is probably true that fēifēi 霏霏 results from reduplication of the verb fēi 飛 ‘fly’ (see Guo Xiliang 1994:60). What is expressed by fēifēi 霏霏 is just a vivid impression of thick snow. This vivid

71 Mengzi cited this line from Shijing · Lingtai, in which, hēhē 鶴鶴 is written as hēhē 鶴鶴. Since hē 鶴 is never independently used but in this binom and hē 鶴 and hē 鶴 are quite similar in terms of their pronunciation, so I follow Mengzi’s understanding and treat the two forms as etymologically related.

72 In Shijing 41, we find a line saying yǔ xuě qǐ fēi 雨雪其霏. Since qǐ fēi 霏霏 is the same in semantic implication as fēi 霏霏 (see Wang Xian 1959) and it is possibly a short form of fēi 霏霏 plus the prefix qǐ 霏霏, I do not think we can take this line as a case in which fēi 霏霏 could be independently used since fēi 霏霏 is bound to the prefix qǐ. Besides, this line in another version of the Shijing is recorded as yǔ xuě fēi fēi 雨雪霏霏.

73 According to Guangyun, fēi 霏 and fēi 飛 differ with respect to their initial (fēi 霏 *pʰèi >EMC pʰuj, fēi 飛 *pʰl >EMC puj). However, since fēi 霏 飛 in Hanshu is in meaning the same as fēi 霏 飛 and Yan Shigu 嚴師古 identified fēi 飛 as the original writing of fēi 霏 , the pronunciation of fēi 霏 should be the same as fēi 飛 (飛).
impression is both related to and different from the meaning of fēi 飛 ‘fly’. One piece of
evidence for this opinion is that ancient people invented the new character fēi 飛 for this word
rather than using the character fēi 飛; this indicates that ancient people already perceived the
great difference in semantic implication between fēifei 羽羽 and fēi 飛.

Let us review another example. In Liji, it is found that a line in the Shijing 49 is quoted as
chūn zhī bēnbēn 鶏之貞貞 ‘the quails are ardently flying’. The supposed monosyllabic base
bēn 贞 ‘brave’ is hardly considered to be associated in semantic implication with the total
reduplication form bēnbēn 貞貞. This line in another version of the Shijing is written as chūn
zhī bēnbēn 鶏之奔奔 (bēn 貞 and bēn 奔 are homophones). Bēn 奔 means ‘run, hurry’ and it is
possibly related in semantic implication with bēnbēn 奔奔 (貞貞). Another example of this kind
can be found in Lunyu, in which it says zu suōsuō rú yǒu xún 足踏踏如有循 ‘he dragged his
feet as if they were held by something to the ground’ (Legge 1872 [1995:147]). The supposed
monosyllabic base suō 踏 in the doublet suōsuō 踏踏 can never be independently used; there
seems to be no way to connect the base to the doublet semantically, but in fact, it is its graphic
form which blurs its origin. There is strong evidence to assume that suō 踏 is no more than a
character exclusively created for this use, and the word represented by suō 踏 should be
identical to that of the character suō 绸. Suō 绸 represents a common word meaning ‘contract,
shrink’, which is related to the vivid impression expressed by suōsuō 踏踏. Thus this
apparently-awkward case turns out to be transparent.

The cases of fēifei 羽羽, bēnbēn 奔奔 and suōsuō 踏踏 show that if we can get to the
spoken word that underlines the graphic form, awkward forms could turn out to be transparent
forms. This phenomenon is quite enlightening in thinking through many awkward cases, in
which the monosyllabic base seems meaningless or almost has nothing to do in semantic
implication with the corresponding total reduplication form (cf., (21a,b,d,f), (22), (23) above). I
do not mean that all awkward forms can be potentially understood in this way, what I mean is
that this method has potential to explain many of them.

I shall now address the rest of the OC total reduplication forms that connote vivid
impression. In the above discussion, no matter what the case was, transparent or not, there was a
monosyllabic word which served as the base on which total reduplication acts. However, there is
another case in which if we try to connect the single syllable to the doublet with respect to their

74 The both characters are identical in sound (*srâkʷ > EMC śuwk) and differ only in their radicals.
semantic implications, we will find it rarely possible to do so with any certainty. Kennedy (1959) already recognized this and he suggested two hypotheses. One is that the doublets had been in most cases invented to suit a particular requirement in poetry; this might sometimes have been an attempt at onomatopoeia. The other one is that there must be considerable punning involved. Kennedy’s first hypotheses is tenable in the language. In the *Shijing*, for instance, there are some doublets such as guānguān 闋闋 in guānguān jǔjǐu 闋闋是鳩 ‘kuan-kuan (cries) the ts’ū-kiu bird’ (Karlgren 1950:2), jiējiē 嘻嘒 in cānggēng jiējiē 倉庚嘈嘈 ‘the orioles sing in sound of jie-jie, and huìhuì 嘺嘒 in lùàn shēng huìhuì 鷥鶺鴒嘒 ‘the bit-bells chime’ (Karlgren 1950:176).

As for the case of punning, Kennedy shows one example quoted from the *Shijing* 220, seen in (27).

(27) qi wèi zì zì wēi yī fān fān yuē jì zì wēi yī fān fān 赣賀貧貧 ‘When they are not yet drunk, their deportment is spiffy. But when they are drunk, their deportment is squiffy’. (Kennedy 1959 [1964:476])

The two doublets fān fān 反反 *pān? pān? and fān fān 幡幡 *p’hān p’hān in these lines are very similar in pronunciation to one another. They are both preceded by wēi yì 威儀 ‘deportment’, but their contexts are quite different. Thus they are differently interpreted, as was done by Kennedy. Of course, Kennedy’s translation reflects an attempt to suit English and these two doublets may not exactly mean ‘spiffy’ and ‘squiffy’ respectively. What he really means is that the poet is making a play on the multiple meanings or similar sounds of words. This hypothesis is quite enlightening, but it is not very clear concerning the generative process. In my opinion, what really happens here is similar to the phenomenon to be tentatively called “marking derived meaning by phonetic modification”. I shall use an example, quoted from Shunping Mandarin, to demonstrate it. The meaning ‘fat’ (adjective) in Shunping Mandarin is denoted by the monosyllabic word p’ān, 胖. Since ‘swollen’ can be considered to be a kind of ‘fat’, this word, then, obtains the meaning ‘swollen’. Simultaneously, the word with this meaning is phonologically modified through changing the fourth tone (55) to the first tone (51). The case of so-called punning by Kennedy is similar to this. According to this understanding, since fān fān 反反 is attached to the context that people are not yet drunk (but this remains unexplained), what
is expressed should be interpreted as a vivid impression produced when people see that situation in which people are spiffy. In contrast, the poem needs a doublet to be attached to the context that the people are drunk and this doublet is supposed to express the vivid impression of squiffy people. Under this condition, the poet arbitrarily changes pronunciation from *pàn? pàn? (反 反) to *pʰàn pʰàn (幡 幡). By means of a slight phonetic modification, he attempts to invent a different vivid impression. Since the doublet *pʰàn pʰàn (幡 幡) is produced virtually on the basis of another total reduplication word, this kind of total reduplication is possibly parasitic. In line with this explanation, we can find some other examples in the *Shijing*, seen in (28).

(28)  a. *Shijing* 43: hé shuǐ mǐmí... hé shuǐ měi měi 河水瀰瀰...河水清清 ‘the waters of the River are voluminous...the waters of the River are smooth. (Karlgren 1950:29)

b. *Shijing* 202: nánshān lièliè p’iǎo fēng fāfā... nánshān lǜlǜ p’iǎo fēng fūfū 南山烈烈, 飄風發發... 南山律律, 飄風弗弗 ‘the Southern mountain (is rank-like=) has peak after peak, the whirl-wind rushes... The Southern mountain (is row-like=) has top after top, the whirl-wind rushes. (Karlgren 1950:153)

c. *Shijing* 120: wǒ rén jūjū... wǒ rén jǐjǐ 我人居居... 我人眾眾 ‘The man who (follow me=) associated with me is so arrogant... The man (follow me=) associated with me is so extravagant.’ (Karlgren 1950:78)

To look into the total reduplication form mǐmí 瀰瀰 as seen in (28a), we recognize that the monosyllabic form mǐ 瀰 means ‘full (said of water)’ (see the *Shijing* 34/2) and total reduplication of mǐ 瀰 gives rise to mǐmí 瀰瀰, expressing a vivid impression of a river full of water. In parallel context, the poet tried to denote the same implication with a slightly-different vivid impression, and so he deliberately changed *mèi (mǐmí 瀰瀰) to *mèi? mèi? (měiměi 浮浮 / wěiwěi 滾濤) for achieving this purpose. In *Jingdian shiwen*, by means of quoting other’s work, měiměi 浮浮 is interpreted as shèngmào 盛貌 ‘description of fullness’. This meaning is the same as that of mǐmí 瀰瀰.

In (28b,c), we can get three such paired total reduplication forms as lièliè 烈烈 *rát rát : lǜlǜ 律律 *Crèt Crèt, fāfā 發發 *pát pát : fūfū 弗弗 * pèt pèt, and jūjū 居居 *kāy kāy : jiūjiū 究究 *kəws kəws. In each of these three pairs, it is found that both the total reduplication forms
are quite similar in pronunciation and they appear in the same context. Thus, we can hypothesize that the second form in each pair was simply the result of tentative invention (phonetic modification) on the basis of the first form, by the poet in order to express a slightly different vivid impression.

In addition to onomatopoeia and parasitism ("punning" in Kennedy’s term), sound symbolism also plays a role in total reduplication. Sound symbolism means that in such cases the assignment of meaning to words is actually based on the intrinsic signification of their sound. This theory is still controversial; however, it turns out to be helpful in thinking through some of the total reduplication forms. I shall show just one case. Among OC total reduplication forms, a number of them are considered to be expressions showing a vivid impression which may be marked with ‘grandness’. By looking into their phonetic component, we can find many of them end with a velar nasal, such as: pengpeng 彭彭, mengmeng 萌萌, shangshang 湛湛, pangpang 龐龐, pangpang 傍傍, yangyang 洋洋, zhengzheng 扶扶, zangzang 兹兹, changchang 嘗嘗, rangrang 響響, yangyang 鳳凰 (from the Shijing above), huanghuang 黃皇 (Lunyu), yangyang 汲汲 (Zuozhuan), dangdang 蕩蕩 (Xunzi), tangtang 堂堂 (Shiji), mangmang 茫茫 (Huainanzi). I do not think that it is a coincidence that so many forms with a nasal velar ending express a similar vivid impression. It could be hypothesized that a nasal velar in a syllable coda position is intrinsically assigned to express a sense of “grandness, bigness”. Thus we can assume that the forms just listed, at least some of them, stem from total reduplication which starts with a postulate that a syllable ending up with a nasal velar could imply “grandness, bigness”.

To sum up, in this section, the discussion has focused on total reduplication with vivid impression. It has been argued that what is expressed by a total reduplication form, whose syntactic function looks like an adjective, is actually a vivid impression associated with the context, rather than a normal meaning. In addition, it was argued that the total reduplication forms with a vivid impression could be classified in terms of the semantic relationship between the base and the doublet. In accordance with the distinction concerning such a semantic relationship, total reduplication is divided into two groups, one with a real base, and the other one with just a theoretical base. For the former, the process has been illustrated in (25) above. The latter refers to the total reduplication which is motivated by onomatopoeia, parasitism (punning in Kennedy’s term), and sound symbolism. It should be noted that it is not acceptable

\[75\] How to determine the significance of other segments in such a syllable needs further study.
for Kennedy to treat these forms as primary forms. The strongest evidence for this judgment is
that these forms are identical to the attested total reduplication words in respect to their
morphological significance and phonological shape. We should treat them as resulting from total
reduplication, even though they may be considered to have a mere hypothetical base.

3.2.2. Nominal and verbal total reduplication

These two kinds of total reduplication were not yet fully-fledged patterns in OC, especially in the
time of Classical Chinese and Early Old Chinese. I shall make a brief description of them
respectively.

The total reduplication of a noun may convey a morphological significance which is the
same as that which is denoted by distributing words such as the English words ‘each’, ‘every’
and ‘either’. The most common example of this kind in OC may be zi zi sün sün 子子孫孫 ‘sons
and grandsons’, as seen in a number of bronze inscriptions as well as in the Shijing. Other
examples are shown in (29).

(29)

<table>
<thead>
<tr>
<th>monosyllabic word</th>
<th>total reduplication word and an occurrence in texts</th>
</tr>
</thead>
</table>
| a. ren 人 ‘man’   | rénrén 人人 ‘man as individuals’ rénrén yǒu gui yǔ jì zhě fū sī ěr yǐl 人 元 有 貴 於 己 者 弗 思 耳 矣 (Mengzi 6A/17) ‘Each man individually has within himself a capacity for nobility, it is merely
that he does not set his mind upon it.’ (Dobson 1959:7) |
| b. zhāo 朝 ‘morning’;  | zhāo zhāo 朝 朝 ‘every morning’; mù mù 暮 暮 ‘every evening’; dàn wéi zhāoyún mù wéi xíng yǔ zhāo zhāo mǔ mù yángtái zhī xià 旦 爲
朝雲，暮為行雨，朝朝暮暮，陽臺之下 (Song Yu 宋玉: Gaotang fù 高 唐 賦) ‘(I) become rosy clouds in the morning and
become to rain in the evening. (You may see me) under the Yangtai mountain every morning and every evening.’ |
| c. shì 世 ‘generation’ | shì shì 世 世 ‘every generation’ | shì shì chéng chē shí ròu 世世乘車 |

76 In Zhongshan 中山 bronze inscriptions, this phrase appears as zǐ zǐ sün zǐ sün 子之子孫之孫 ‘sons’ sons
Except for the distributive sense, we may also ask if there is any other kind of semantic significance conveyed by total reduplication nouns in OC as it is attested in modern Chinese that total reduplication otherwise could convey a meaning of diminution and could form semantically-undecomposable nouns. These two kinds of total reduplication nouns do not exist in OC. Nevertheless, one case needs discussing since at first glance it looks like a case of total reduplication. Examples are shown in (30).

(30) a. xīngxīng 猩猩 ‘ape’ (*Liji, Lūshì chunqiu, Erya, Shānhài jīng*)
   b. fēifēi 狐狐 ‘baboon (a mammal)’ (*Erya, Shānhài jīng*)
   c. huāhuān 煦煢 ‘a bird in legend’ (*Lūshì chunqiu*, written as 漁漁 in *Shānhài jīng*)
   d. luóluó 羅羅 ‘a kind of bird’ (*Shānhài jīng*)
   e. mánmán 蠾蝨 ‘a kind of bird’ (*Shānhài jīng*)
   f. jiānjīān 鶴鶴 ‘fabulous bird that had only one wing each and thus had to fly in pairs’ (*Erya*)
   g. dàndàn 鴻鴻 ‘a kind of bird’ (*Fangyan*)
   h. yánynán 燕燕 ‘swallow’ (*Shijing, Erya*)

All these forms are questionable in terms of OC total reduplication. For the forms in (30 a-f), they refer to animals either from foreign countries or from legends; thus it is rarely possible to recognize them as total reduplication words with certainty. As for dàndàn 鴻鴻 (30g), which is found in *Fangyan*, the problem is that it cannot be treated as reliable data since dàndàn 鴻鴻 is replaced with kāndàn 鴻鴻 in another version of *Fangyan*. In the *Shijing*, yánynán 燕燕 undoubtedly refers to swallows (a bird). However, since the word swallow is consistently denoted by monosyllabic form yán 燕 as in *Zhuangzi, Lūshì chunqiu* and *Hanfeizi*, it can be assumed that this is a case in which the name of this bird (swallow) is repeated, the same as we find in huángniǎo huángniǎo wǔ jì yǔ sāng 黃鳥黃鳥，無集于桑 (*Shijing 187*) ‘Yellow

77 For the case of semantically-undecomposable nouns, we can find examples such as guōguō 蟋蟀 ‘katydid’ (*Hongloumeng 40*).
birds, yellow birds, do not settle on the mulberry tree.’ (Karlgren 1950:129), in which the phrase yellow bird is repeated.

Verbal total reduplication does not exist in Classical Chinese and Early Old Chinese. One famous form to be mentioned for the present purpose is cāicāi 采采, which appears in the Shijing nine times. Among these uses, there are seven times in which some scholars such as Mao Heng, Zhu Xi, and Karlgren (1950) treat it as a verbal form (‘pick up and pick up’). Ding Shengshu (1940) disagreed with this view and argued that cāicāi is a adjective form, meaning ‘bright and beautiful’. Ding Shengshu observed that in Classical Chinese transitive verbs can be only used alone and they are never reduplicated. In the Shijing, we can only find a few reduplication forms like yányán 言言, xiăoxiăo 笑笑, yūyū 語語, in which the base in each example is a verb. But what is produced in this process is a kind of vivid impression. The reduplication in these three examples is different from the verbal reduplication in the later stage of the language.

Real reduplicative verbs with a repetitive sense under the total reduplication pattern did not appear until the end of Later Old Chinese. In Gushi shijiushou, we can find such a form in xīngxīng chōng xīngxīng yǔ jūn shēng bié li 行行重行行，與君生別離 ‘I will keep going on a long journey, and I am apart for ever from my darling.’(Wenxuan 29), in which the verb xīng 行 ‘to walk, to go’ is reduplicated as xīngxīng行行 to denote a repetitive sense. Though we have to admit that this is a case of repetitive reduplication, it is reasonable to think that total reduplication with repetitive significance does not seem to be a full-fledged reduplication pattern since it tends to draw support from other kinds of forms. In the case of xīngxīng行行, as shown above, the verb chōng 重 ‘double, duplicate’ is involved to support the meaning. This indicates that verbal total reduplication with a repetitive sense had possibly not become well-established at that time. That verbal total reduplication with a repetitive sense was not a well-established pattern in OC is understandable. As shown in Chapter two above, the verbal retrogressive reduplication is a modified reduplication pattern. If both verbal patterns, that is, the modified and unmodified (total) with an identical morphological significance, could coexist at one time, there would be a problem since we do not know how to explain why it is phonologically modified in some cases and why it remains intact phonologically in other cases. As for how the phonological component and morphological component interact with one another, that will be the topic of the following chapter.
CHAPTER FOUR

Interaction between morphology and phonology in OC reduplication

4.0. Introduction

The investigation into OC source data, carried on in Chapter Two and Chapter Three, has explicitly shown that all reduplication patterns are unexceptionally composed of morphological and phonological components; in other words, the operation of any kind of reduplication always gets both morphological and phonological components involved. Furthermore, it has been also found that the four reduplication patterns, i.e., progressive, retrogressive, fission and total reduplication patterns, are generally matched with various kinds of semantic implications respectively. That is, the progressive pattern presents a strong tendency to express 'SMALLNESS' or 'VIVIDNESS', the retrogressive pattern 'REPETITIVE', the fission reduplication pattern 'SPECIALIZATION', and the total reduplication pattern 'VIVID IMPRESSION' (a dependent sense which cannot be strictly defined). Such a correlation between morphological and phonological components, of course, cannot be interpreted as coincidence; rather, it indicates that an intrinsic correspondence must exist between them. Let us consider this matter from the point of view of operative process. As we have argued above, reduplication in Chinese should be considered a process in which the original monosyllabic base is first totally duplicated and then undergoes a kind of phonological modification (non-modification may also be treated as a kind of particular modification, i.e., zero modification), eventually forming different reduplication patterns. Crucially, it is recognized that both phonology and morphology interact with each other during this process. First, we have found that all reduplication patterns convey morphological implications; this fact indicates that all reduplications are morphologically motivated. Second, as just mentioned, there is a generally-clear relationship between the phonological patterns and particular morphological implications; since we have shown that the morphological implications are the cause for occurrence of phonological reduplication, by the same token, we can further hypothesize that it is different morphological implications which result in different phonological reduplication patterns. Third, though the differentiation of reduplication patterns is determined by morphology, phonology itself is
definitely not an entirely-passive component during the process. In considering that the way of phonological modification is to some extent regulated and, thus, we have such phonological alternations as a liquid onset in the second syllable in progressive and fission reduplication patterns, [-/+round] distinction in retrogressive reduplication, a rhyme, similar to the original, in the first syllable in fission reduplication, and an unmodified form in total reduplication pattern, it is not difficult to think that the formation of reduplication patterns is, at least to some extent, subject to the phonological properties of the language. To sum up, it is found that reduplication is really a process operating on the interface of morphology and phonology. Under this condition, we have to get these two components involved in order to get a better understanding of reduplication. This is just what I have been trying to pursue in the preceding chapters. In this chapter, nevertheless, the discussion will focus on how morphology and phonology interact with one another in OC reduplication. Before advancing concrete analyses, however, I first shall demonstrate some universal and language-specific properties in morphology and phonology, all of which are active processes.

4.1 Two principles

4.1.1 One syllable/one meaning principle

In view of the monosyllabic structure of Chinese vocabulary, Chao (1968, 1976), Xu Tongqiang (1991, 1992), and Wang Hongjun (1994, 1999) have preliminarily identified a language-specific principle called “one syllable/one meaning (yīyín yīyì — 音 字)”. With a slight modification, this principle can be expressed as follows.

(1) One syllable/one meaning principle (OOP)

Chinese morphemes are monosyllabic in nature; that is, one meaning should be denoted by just one syllable and one syllable should always be a bearer of meaning.

\(^1\) Yín 音 normally means sound, but in this case it is tentatively used by them to denote such meaning as “syllable".
To justify this principle, we first have to come up with an adequate explanation for a fact which is apparently against what is expressed by this principle. The fact is that some morphemes are less than one syllable (non-syllabic) or bigger than one syllable (polysyllabic).

In modern Chinese, cases of morphemes less than a syllable are very rare. One important morpheme of this kind in standard Mandarin is the non-syllabic retroflex suffix -r, mainly denoting diminutive. This morpheme is also attested in many other dialects though it may surface as other forms such as infix -l- in Pingding dialect (Xu Tongqiang 1981, Wang Hongjun 1994), -l- in Yanggu (Dong Shaoke 1985), suffix -n/-ŋ in some dialects of Zhejiang (Xu Tongqiang 1985; Lin Tao and Wang Lijia 1992), -m/-n/-ŋ in Xinyi dialect (a Cantonese dialect; Ye Guoquan and Tang Zhidong 1982), and a syllabic -ŋ with a geminated onset in a variety of Beijing Mandarin (Li Rong 1957) and in Shunping Mandarin (Sun Jingtao 1998b). Comparatively, there are a few more cases of non-syllabic morphemes found in OC. According to studies such as Haudricourt (1954), Pulleyblank (1962, 1973, 1991a, to appear), Mei Tsu-Lin (1980, 1989), Graham (1983), and Takashima (1996b), we can preliminarily recognize such OC non-syllabic morphemes as suffixes *-s, *-n, *-t, *-k, and *-l, prefixes *s- and *a-, and prefix or infix *r. That all these modern and ancient morphemes are less than a syllable in length is apparently contrary to the One Syllable/One Meaning Principle (henceforth, OOP). However, this is actually not the case. Two kinds of evidence show that these non-syllabic morphemes should be treated as exceptions to the principle. First, in contrast to the numerous syllabic morphemes, these kinds of morphemes are very rare. Second, these morphemes are affixes and what is denoted by these morphemes is a kind of dependent meaning, rather than independent content meaning. Such special properties of these forms naturally lead to a distinction between them and the majority of Chinese morphemes. Under this condition, the principle in question is still tenable in spite of the existence of such non-syllabic morphemes.

To show that OOP is tenable, the other apparently-contrary case which we have to account for is the existence of polysyllabic morphemes. Some scholars have tried to treat these morphemes as exceptional forms by saying that they are very scarce. However, this is not a convincing explanation. As a matter of fact, in ancient and modern Chinese (both Mandarin and others) there are hundreds of morphemes which are apparently composed of more than one

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2 For a fuller discussion on this suffix, see Chao (1968), Pulleyblank (1984), Lin Tao and Wang Lijia (1992). Analyses of this suffix in terms of generative phonology can be found in Wang Zhijie (1997) and Sun Jingtao (1998b).
syllable (principally the case of two syllables). Clearly, such a large number does not allow us to simply treat polysyllabic morphemes as exceptions. Thus, how to adequately account for this kind of morpheme becomes a vital issue; the cost of failure is the tenability of OOP itself. After a general investigation, however, it is satisfying to find that almost all of the disyllabic morphemes in both ancient and modern Chinese are explainable. Put simply, for the majority of these morphemes, it is found that they are actually not protomorphic forms; instead, they are produced through some morphological or phonological processes which are based on a monosyllabic morpheme. In addition, it is also found that some disyllabic forms stem from foreign languages or other origins. These findings, determinative of accounting for disyllabic morphemes in terms of OOP, can be summed up under the following five titles.

1) Reduplication. As extensively discussed in Chapter Two and Chapter Three above, reduplication has been shown a very important source for the production of a number of so-called disyllabic morphemes. Since these disyllabic morphemes, actually reduplication forms, are principally based on monosyllabic morpheme, their existence cannot be considered a case against OOP.

2) Historical development of phonology. As a result of the historical development of phonology, some segments possibly become impermissible under the new syllable template of the language. Under this condition, in order to preserve these original segments, new materials were inserted into a primary syllable (one morpheme), thereby forming a new syllable. Such segmental preservation inevitably resulted in a disyllabic morpheme (same as the original monosyllabic morpheme in terms of meaning). Without information on the nature of this process, this disyllabic morpheme is quite possibly misunderstood as a protomorphic one, apparently against OOP. At least two kinds of cases along these lines can be recognized; one is dimidiation and the other one is epenthesis. Dimidiation, as discussed in Chapter Three above, refers to a phonological development in which the two original initial consonants in one syllable are preserved by inserting a rhyme between them when the language incipiently no longer allowed initial consonant clusters in the Classical Age of the Eastern Zhou and later (see Boltz 1994). As this process went on, one monosyllabic morpheme could have diachronically changed into a disyllabic form. As instantiated in Chapter Three above, the disyllabic word bûlû 不律 *pêy rwèt > EMC pwu lwig ‘writing brush’ (Erya) was produced through dimidiation of the monosyllabic word bî 筆 *prêt > EMC pit ‘writing brush’ (Zhuangzi, Erya): *prêt → *pêy

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rwêt. With this understanding in mind, disyllabic morphemes like búlù 不律 should not be treated as a case against OOP.

The other case, in which disyllabic morphemes arise as a result from historical development of phonology, is epenthesis. Epenthesis may have been active in many developing stages of the language and here I shall just show some instances from LMC or EM (Early Mandarin) to modern Mandarin. As shown in many studies (e.g., Pulleyblank 1984, 1991c), some new constraints which did not allow voiceless stop and bilabial stop -m in the coda position, especially in Mandarin dialects, started to be effective hundreds of years ago. Under such constraints, these codas were bound to disappear; in terms of generative processes, they became stranded. However, some of these codas are actually preserved since epenthesis of a new rhyme at the very end of the syllable makes it possible to syllabify these stray codas as the onsets of new syllables. Consequently, concerning the shape of morphemes undergoing such a process, it is found that monosyllabic morphemes become disyllabic morphemes. Here are some examples. In standard Mandarin, the verbal meaning 'look for' is denoted by a disyllabic form 꺹دق mo. This form in XDHYC is recorded as 꺹摸, in which 꺹دق 꺹 摸 means 'pace up and down' and 꺹摸 means 'to touch'. This, however, is no more than a case of folk etymology. Actually 꺹دق 꺹 mo should be a disyllabic morpheme rather than a compound. This disyllabic morpheme stems from the monosyllabic morpheme 꺹פ 꺹 摸 'look for'. The word 꺹פ 꺹 in Middle Chinese ended with -m. Parallel to this -m, the labial stop ending -p in Middle Chinese also played a role in producing so-called disyllabic morphemes in later forms of the language. Examples seen in (2) below clearly show this case (cf., Yu Min 1988).

(2) monosyllable in LMC disyllable in Beijing Mandarin
a. lá 拉 lap ‘pull’ la₃₅ pa ‘pull, drag, help, promote’
b. zhā 揚 tsaᵣ ‘wink’ tsa₂¹⁴ pa ‘wink’
c. qiā 揚 kʰjaːp ‘pinch, nip’ tɕ’ja₃₅ pa ‘grasp with a tight fist’
d. zá 雜 tsiap ‘mixed, sundry’ tsa₃₅ pa ‘mixed, sundry’

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³ The forms of 꺹פ 꺹 in earlier stages are sim’ (EM), sfim (LMC), and zim (EMC).
The monosyllables in LMC all end up with a voiceless stop -p. In the development from LMC to Mandarin, syllables with coda -p were no longer allowed; thus this stop got stranded. However, epenthesis of the rhyme -a, resulting from assimilation of the preceding rhyme, makes it possible to re-syllabify this original coda as the onset of the new syllable. Thus we can see that these four disyllabic morphemes in (2) all come from monosyllabic morphemes and they are not protomorphic forms.

3) **Synchronic alternations.** Common phonological alternations, from a synchronic point of view, such as assimilation, dissimilation, and neutral tone have possibly blurred the real phonological structure of the morpheme; some compounds, therefore, are possibly misunderstood as disyllabic morphemes. For instance, the game called “catching a train” in English is called xu51 lwo5 po55 ta214 lwo5 po55 in Shunping Mandarin. The people possibly know that the first syllable xu51 means ‘to protect’ and the fourth syllable ta214 means ‘to hit’, but they don’t know what lwo5 po55 means. Thus lwo5 po55 is possibly misunderstood as a disyllabic morpheme. In fact, lwo5 po55 is no more than a result of retrogressive assimilation within the compound law51 po5 (老婆) ‘wife’. Since these kinds of alternations are not easy to recognize, there must be quite a few cases in which compound words have been for this reason inappropriately treated as disyllabic morphemes; the consequence of this mistreatment is that the disyllabic compound is misunderstood as a disyllabic morpheme which apparently cannot be semantically decomposed.

4) **Loanwords.** It is easy to understand that bringing foreign words in the way of transliteration into Chinese could give rise to disyllabic morphemes. Some examples are shown in (3) (93a-d) are quoted from Pulleyblank (1962); (3e) from Liu Zhengtan et al. (1984).

(3)

<table>
<thead>
<tr>
<th>loanwords in Chinese</th>
<th>origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. mûxu 首蓿 *mêkw sêkw &gt; EMC muwk suwk ‘lucerne’ (Shiji)</td>
<td>*buksuk, *buxsux, *buxsux (Old Persian or Tocharian (=Dayuan 大宛))</td>
</tr>
</tbody>
</table>

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4 The common term for this game in standard Mandarin is called lâo yîng zhūā xiǎo jī 老鹰抓小鸡 ‘eagle catches small chicken’.

5 In Shunping Mandarin there is a tone sandhi rule that a rising tone coming before a neutral tone will be changed to a departing tone. So, law214 po5 (老婆) ‘wife’ is actually pronounced as law51 po5.
b. putáo 蒲陶 *báý dèw > EMC bō daw  
'grape' (*Shiji)

| Bātaka (Old Persian) or Budaw (Tochari) (=Dayuan 大宛) |
|---|---|
| suǒ duó 骨澤 *sák lák > EMC sak dak 'a kind of boot' (*Shiming) |

| sāgdi (Imbazk dialect in Yenissei), sāgdi (Bakhata dialect in Yenissei) |
|---|---|
| juéti 驮 *kwá̂t daj > kwet dej 'a kind of horse' (Li Si 李斯: Jian zhuke shu) |

| *kuti (earlier form in Yenissei) |
|---|---|
| hútong 胡同 EM: xu’ tūn ‘lane, alley’ (Guan Hanqing 關漢卿: Dandaohui) |

| gudum (Mongolian) |

Without an understanding of their foreign origin, the disyllabic morphemes seen in (3) are possibly used as evidence against OOP.

5) **Onomatopoeia.** Onomatopoeia is a kind of word formation by which new words are created though imitating natural sounds. Due to the unique nature of this process, the disyllabic forms produced in this way should not be taken as evidence against OOP. Here are two examples. In Shunping Mandarin, cuckoo is called kwa₅₅ ku₁₁, which is a product of onomatopoeia since it is also used to imitate the sound of the bird.⁶ In Zuozhuan, it says: min rén ji tōng ér huò yǔxū zhī 民人疾痛，而或煩休之 ‘the people are suffering from pain and illness and someone is concerned about them’. The disyllabic form yǔxū 燧休 in this sentence has a verbal meaning ‘be concerned about, care for’. According to ancient commentators, this is an onomatopoeic word and it stems from the imitation of the sound of gently blowing on somebody’s sore spot to ease his suffering.⁷ It should be noted that reduplication also plays a part during the word formation of onomatopoeia. This is the reason why these two onomatopoeic words share either initial or rhyme in respect to the two component parts in each case.

The above discussion has shown that many so-called disyllabic morphemes are actually not protomorphic. Chinese disyllabic forms are apparently very complex and numerous, however, I believe that most of them, if not all of them, can be explained in line with these considerations.

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⁶ One piece of children’s folk rhymes says: 呃穀 呃穀，快到麥熟 kwa₅₅ ku₁₁ kwa₅₅ ku₁₁ kwaj₅₁ twaj₅₁ maj₅₁ sow₁₁ ‘(the birds are singing) kwakú kwakú, wheat harvest is just around the corner’.

⁷ Du Yu (222-284) 杜預 interpreted yǔxū 燧休 as tóng nián zhī shēng 痛念之聲 ‘sound of soothing’. The Eastern Han (25-220) scholar Fu Qian 服虔 pointed out that yǔxū 燧休 expresses a practice the same as that of the present, in which parents use their mouths to blow on their children’s sore spot for relief (若今時小兒痛父母以口就之).
Under this condition, it naturally leads us to a conclusion that though there are a lot of disyllabic morphemes in Chinese, their existence poses no problem to OOP. With this certainty about disyllabic morphemes, we feel reasonably sure to claim that what is reflected in OOP is an indisputable fact, no matter whether we can achieve a theoretical explanation for it or not.

Nevertheless, any fact must have good reason for its existence and OOP, as a principle based on facts, is of course no exception. Some theoretical arguments for why there could be such a principle have been advanced. One important integrated part of the answer for this question results from the recognition of the special status of the syllable. Briefly speaking, the special status of the syllable is that the syllable is always a fundamental unit in phonological strings and is always an essential concept for understanding phonological structure. These characteristics of syllables can be recognized from various angles. As pointed out in Ladefoged (1995:244), “nearly everybody can identify syllables”; by contrast, “people who have not been educated in an alphabetic writing system find it much more difficult to consider syllables as being made up of segments (consonants and vowels)”. This is to say that the syllable is much easier to identify than other phonological constituents such as onset, nucleus, coda, and rhyme.

A prosodically-oriented scrutiny also yields the same conclusion. In accordance with McCarthy and Prince (1995a), there is a prosodic hierarchy in which prosodic units are arranged in the order mora ($\mu$) – syllable ($\sigma$) – foot (F) – prosodic word (PrWd). In this hierarchy, the mora seems to be a basic prosodic unit, but in view of the fact that definition of a mora depends principally on the position and behavior of sound in terms of the constituents of a syllable, we argue that the syllable is a more fundamental or basic prosodic unit. As far as foot and prosodic word are concerned, it is found that their establishment is in part based on the concept of syllable: the foot is a constituent formed by grouping together a number of syllables while the prosodic word is a constituent formed by grouping together a number of feet.

That the syllable serves as the fundamental or basic unit in phonology is not an accident, instead, it is inevitable outcome of its own properties. Let us think about how the syllable is defined. We know that it is very difficult to define the syllable, but one relatively reliable way for defining the syllable is in terms of the inherent sonority of each sound. Simply speaking, (I shall show more details on this issue below) each sonority peak will define a unique syllable.

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8 For instance, a consonant may contribute one mora in the coda position while it does not do so in onset position.

9 Ladefoged (1993:243) says, “although nearly everybody can identify syllables, almost nobody can define them”. 191
Since sonority (loudness) is quite easy for people to identify, it is not difficult to identify syllables. This is the major reason why syllables are the most prominent among the various phonological units. In the case of Chinese, it is found that monosyllabic morphemes constitute an overwhelming majority among the morpheme stock. With this overwhelming force, the language develops a constraint that only monosyllables can be employed to signal morphemes; thus OOP arises.\(^{10}\)

Both empirical and theoretical experience has provided evidence for the reality and rationality of OOP. Now let us see how OOP plays an important part in such language phenomena as weak stress (weakly stressed) and loanwords.

Syllables with weak stress are common in Chinese. Why could a syllable be assigned weak stress rather than normal stress? I think the major cause is rooted in OOP. Let us illustrate this point with a distinction between two kinds of words. Traditional Chinese usage distinguishes between full words (shizi 實字) and empty words (xūzi 虛字). The former, also called content words, corresponds to nouns, verbs, and adjectives that carry the main semantic content. The latter correspond to pronouns, prepositions, adverbs, conjunctions, interjections, and other particles whose main function is to show grammatical significance. This distinction turns out to be helpful in thinking through how weakly-stressed syllables are created by OOP. Briefly, it is found that empty words, rather than full words, are potentially weakly stressed. Several cases can be drawn to support this point. First, in accordance with Todo (1953) and Takashima (1999), the patterns of strong and weak syllables in the Shijing are generalized as both iambic and trochaic metrical ones; it is found that what appears in the weak syllable position is nearly always empty words (i.e., function words).\(^{11}\) Second, phonological fusion is a quite common phenomenon in Chinese. Some examples are given in (4).

\[(4) \quad \text{a. } zhī hū 之乎} *tèy ㄕㄚ\(^{12}\) → zhū 諸 *tày, \text{where } zhī \text{ is the object pronoun and } hū \text{ is}\]

\(^{10}\) Why OOP exists in Chinese but not in many other languages is possibly that the Chinese syllables are consistently heavy syllables (two moras) in general.

\(^{11}\) One piece of evidence showing empty words in weak stress position is that in many cases empty words are not treated as rhyme even though they are placed in the last syllable position of a line; instead, the immediately-preceding full words are treated as rhyme (see, for example, Shijing 81 Zun dalu 舊大道). The opposite case occurs.

\(^{12}\) The initial *ㄕ- of 之乎 ㄕㄚ is a weakened form of *x-. See Pulleyblank (1986).
either the final question particle or a variant of the coverb "in, at, to, from"

b. bùwéi 不唯 *pèi lwèl → fèi 非*pèl, where bù is negative and wéi is a copula

c. bùkě 不可 EM pù kʰu → pó 回 EM p hʰu, where kě means ‘permissible’

d. tswo₃₅ ʂ₃₃ (做 嘿) → tsua₃₅/tsua₃₅, where tswo₃₅ means ‘to do’ and ʂ₃₃ means ‘what’ (Luoyang 洛陽 dialect)

e. u₃₅ xuoe₃₃ （冗 域）→ uœ₃₅, where u₃₅ means ‘that’ and xuoe₃₃ is a measure word (Pingyao 平遙 dialect; see Hou Jingyi 1989)

f. ki₃₁ to₄₄ (幾 多) → kio₄₄, where ki₃₁ means ‘how many’ and to₄₄ means ‘many’ (Kejia dialect, Yuan Jiahua et al. 1983)

g. feʔ₂₃ zën₂₄ (勿 曾) → fen₄₄, where feʔ₂₃ means ‘not’ and zën₂₄ is an adverb indicating that an action once happened or a state once existed’ (Wu dialect)

As shown in these examples, almost all words involved in these phonetic fusion cases are empty words. Based on this fact, it can be inferred that these empty words are weakly stressed, since weakly stressed syllables are more likely to be fused with others. That the empty word is potentially more likely weakly stressed than the full word reflects the function of OOP: one normal content meaning is denoted by just one normally-stressed monosyllable; under the constraint of this powerful principle, when a meaning happens to be a grammatical one (a modified meaning in accordance with the meaning of a full word), the monosyllable is correspondingly reduced as a degenerative syllable, with weak stress or neutral tone.

The OOP’s function on weak stress is also applied to the case of full words. This point can be understood through an inquiry focusing on the normal/weak stress alternation within disyllabic compound in Mandarin. As we know, numerous disyllabic compounds can be semantically decomposed as two morphemes, no matter whether they are carried over from ancient time or created in contemporary time. However, in many cases, the semantic relationship between the compound and its component parts may have blurred for speakers of Mandarin; that is, they do not know how the compound is semantically related to the two component parts. These compounds may be called etymologically-opaque compounds; and the reasons for their

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13 In Cantonese, kei₃₅ to₅₅ (幾 多) is reduced as kei₃₅ in which the second syllable is deleted but the main vowel of the first syllable is subsequently lengthened. See Yuan Jiahua et al. (1983).
occurrence are various. One important reason is the diachronical development with respect to the semantic significance of the component parts of the compound. As we can imagine, when a compound was originally created, there was a semantic relationship between the component parts and the compound. However, over time, the meanings of these forms, which were involved in the formation of the compound, may have disappeared or basically been replaced with other meanings. Under these conditions, speakers may not be able to see the semantic relation between the compound and its components, thus presenting a so-called etymologically-opaque compound. For instance, Yi 衣 and chang 衣 denote ‘upper outer garment’ and ‘skirt (for both man and women)’ respectively and they are used together to form a compound meaning ‘clothing’ in general. Yi chang is still frequently used in Mandarin (actually pronounced as yi-shang), but it has already become an etymologically-opaque compound since the original meaning of chang has degenerated now.14

Another reason responsible for the occurrence of etymologically-opaque compounds is that the semantic connection between the compound and its component parts is not easily understood; when this occurs, the etymology of the compound blurs. For instance, the compound dafa 方 means ‘easy, unaffected’. Since da and fang are commonly used in Mandarin to denote ‘big’ and ‘square, direction’ respectively, it is hard to make people believe that the combination of these two forms could produce that meaning. In fact, the meaning of Dafa 方 in modern Chinese results from the secondary development of the word in Classical Chinese where it means ‘great accomplishment’, e.g., 吾常見笑於大方之家 ‘I would forever have been laughed at by masters of great accomplishment’ (Zhuangzi • Qiushui). In considering the semantic construction of this disyllabic form, the people who speak Mandarin are not possibly referring back to the usage in Classical Chinese; instead they most likely just focus on the modern usage of the two components da ‘big’ and fang ‘square, direction’. Thus, an etymologically-opaque compound arises. In the same line, ti-mian 體面 ‘good-looking’ is also treated as an etymologically-opaque compound since there does not seem to be a good account for why a combination of ti ‘body’ and mian ‘face’ could produce the meaning ‘good-looking’.

Let us look into how speakers treat these etymologically-opaque compounds. Simply, what they do is to make the second component part (syllable) weakly-stressed and tonally neutralized, thereby presenting a trochaic disyllabic compound. The occurrence of this trochee is simply a

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14 Chang can never be used except for the use in this compound.
product of OOP. In accordance with OOP, one meaning must be denoted by just one syllable. In the case of an etymologically-opaque compound, nevertheless, the semantic relation between the compound and its two (or one in some cases) component parts has been broken; thus what is denoted by the compound seems to be one morphemic meaning. This seems to be a case against OOP: OOP requires that one meaning be denoted by just one syllable, but here one meaning is denoted by two syllables; in other words, a disyllabic form can not be decomposed in meaning. In order to reconcile the conflict between OOP and a disyllabic compound with one meaning, the remedial measure adopted in the speech community is to degenerate the second syllable, in particular, neutralizing its tonal specification. As we know, the syllable in modern Chinese is typically composed of three indispensable component parts, that is, initial (including zero initial), rhyme, and tone. By this standard, one syllable without tonal assignment should not be treated as a typical syllable in Chinese; instead, they may be viewed as a quasi-syllable. Under these conditions, we can say that the tonal degeneration with respect to the syllable in question actually give rise to a compound composed of one syllable plus a quasi-syllable. From this point of view, what we have got is actually not a case in which two syllables denote one meaning. Thus it can be seen that it is OOP that takes effect and makes the second syllable of an etymologically-opaque compound weakly stressed or tonally neutralized.

We have seen how OOP plays a part in the case of weak stress. Now let us review the case of loanwords for the same purpose. As many scholars have pointed out, Chinese is generally very resistant to borrowing foreign terms outright. Why? In my opinion, the fundamental cause behind this phenomenon stems from the existence of OOP in Chinese. With regard to possible source languages such as English, French, German, Sanskrit, Japanese, and the Altaic languages,

15 Why is the target syllable for this degeneration the second rather than the first? The reason lies in the fact that the normally-stressed compound is actually a quasi-iambic compound (cf., Chao 1976, Lin Tao and Wang Lijia 1992). In order to make a sharp distinction from this established pattern, this marked pattern naturally falls into a trochaic pattern.

16 One may refute this proposal by referring to the neutral tone ("fifth tone"). From both a synchronic and a diachronic perspective, this is misleading. Unlike the four basic tones, neutral tone syllables can not be pronounced in isolation. See Norman (1988).

17 The discussion made here is mainly based on the Northern dialects. As for such southern dialects as Min, Kejia (Hakka), and Cantonese, since there are at least 20% more monosyllabic words in the basic vocabulary than in the North (cf., Yue-Hashimoto 1987), the weak stress phenomenon within disyllabic words (cf., Yuan Jiahua et al. 1983) will not be supposed to be as common as that in the North. The details need to be worked out.
what is found is that none of these languages has an exclusive monosyllabic structure in its stock of morphemes. Under these circumstances, if the borrowing of foreign words happens by way of transliteration, it will definitely bring in many polysyllabic words, which do not satisfy OOP in Chinese. In order to bring foreign words into Chinese without violating OOP (except for proper nouns), the Chinese adopted the following. First, they make use of purely-native creations or calques as far as possible: Sanskrit Loka ‘the universe’ becomes shìjiè 世界 (‘the world region’), telephone is diànhuà 電話 (‘electronic speech’), Greek grammaˈtikē (or Latin grammatica) ‘grammar’ is yǔfǎ 語法 (‘language law’), etc. Qiānnián change 千年蟲 (‘thousand year worm’) ‘millennium worm’ is an example of calque. Second, transliteration may be simultaneously accompanied with semantic implications in terms of Chinese syllables, though the internal semantic structure of the Chinese loanword may be quite different from the original: ‘engine’ is translated as yínqīng 引擎 (‘stretch and lift’), Coca-Cola is translated as kěkǒu kēlè 可口可樂 (‘good for mouth (tasty) and good for enjoyment (enjoyable)’), ‘motor’ is translated as mǎdá 馬達 (‘horse reaches’). Third, if the source term is of monosyllabic form (including forms of this kind produced through abbreviation), then, transliteration is possibly adopted since a monosyllabic loanword satisfies the requirements of OOP. Thus we can see that although polysyllabic loanwords sponsored by transliteration are usually short-lived, the following monosyllabic ones have taken root in Chinese: mǐ 米 < meter, kǎ 卡 < card, bèng 泵 < pump, bàng 磅 < pound, dá 打 < dozen, pāo 抛 < polish, Cantonese pō53 波 < ball, tà 塔 < Sanskrit stūpa ‘pagoda’, fō 佛 < Sanskrit buddha ‘Buddha’.

To sum up, a lot of facts have been shown to support the reality of OOP. From a negative point of view, I have pointed out that many cases, which are apparently against OOP, are actually still in accordance with OOP. From a positive point of view, I have illustrated some cases in which it is because of OOP that some language phenomena occur. In fact, the function of OOP is especially prominent in morphological processes such as reduplication.

18 The earlier form for this loanword is delùfēng 德律風 (‘virtue’, ‘law’, ‘wind’), which was later given up certainly because it does not make sense from a syllabic point of view and because OOP eventually had an effect on the way of the foreign word adoption.

19 Historically there are many loanwords for Buddha such as fō 佛, fòtú 佛陀, fōtuó 佛陀, fūtú 浮屠, and fūtú 浮圖. But only the monosyllabic form fō 佛 became the formal term for Buddha in Chinese.
4.1.2 Sonority Sequencing Principle

In trying to get an understanding of this principle, we need to know what the sonority of a sound is first. The sonority of a sound refers to its loudness in relation to other sounds with the same length, stress, and pitch. In terms of acoustic phonetics, the sonority of a sound is determined by the size of the variations in air pressure that occur; that is, a sound with a larger average size, or amplitude, of the variations in air pressure is more sonorous than a sound with a smaller average size, or amplitude, of the variations in air pressure. In accordance with their sonority, which can be acoustically measured, speech sounds can be scaled in the manner indicated in (5). This scale presents a five-grade classification for all speech sounds in terms of their sonority.

(5) Sonority scale of speech sounds (bigger number indicates greater sonority):

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5
4   vowels
3   glides
2   liquids
1   nasals

obstruents
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This general classification for the entire class of speech sounds has been relatively widely accepted. Moreover, each category is necessarily subcategorized since in some cases it may be necessary to distinguish members of a category with respect to their sonority. Again, based on acoustic measurements, Ladefoged (1993:246) presents the following sonority ranking for English: a > æ > e > I > u > i > l > n > m > z > v > s > f > d > t > k. In line with what is implied in this ranking, we may make a more elaborate division of each category. As for the vowels, the sonority scale can be described in terms of the following: the lower the vowel is, the more sonorous it is; vowels with [+back] are more sonorous than vowels with [-back] at the same height. As for the obstruents, it can be generalized as follows: voiced fricative > voiceless fricative > voiced stop > voiceless stop.

Recognition of the sonority of a sound is very important with respect to the definition of a syllable from the point of view of prosodic structure. As early as a century ago, scholars such as Jespersen (1904) and Saussure (1916) had already noted that each syllable has a peak of sonority. In carrying on this work, modern scholars have made wide observation on syllables in terms of sonority and have developed a principle called Sonority Sequencing Principle.
(henceforth, SSP) (see, for example, Kenstowicz 1994), seen in (6) below.

(6) Sonority Sequencing Principle

Onsets are required to rise in sonority toward the nucleus and codas are required to fall in sonority from the nucleus.20

Thus, with respect to the sonority of its segments, each syllable can be represented by a peak-shape. Let us have a look at examples in (7) below (V: vowel; G: glide; L: liquid; N: nasal; O: obstruent).

Examples (a) and (b) present sonority peaks. As for Examples (c) and (d), they can also be considered to present sonority peaks.

Due to its widely-applicable nature with respect to the prosodic structure of a syllable, SSP provides a basically reliable guide about how the segments of a syllable in any language are arranged in terms of sonority. Thus, along with this principle, we are even able to predict what kind of segment is supposed to arise in a particular position in terms of syllable constituency. Given this, it is predictable that SSP will help in analyzing phonological processes.

Of the two principles I have just outlined the first one, i.e., OOP, is language-specific. It is applicable to Chinese, and so is it supposed to be applicable to some other languages with monosyllabic structure in their morpheme system. The second one, i.e., SSP, is to some extent

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20 SSP is possibly to a small extent violated in some cases. For instance, the initial cluster of the English syllable [spid] (speed) presents a downward profile in terms of sonority. Nevertheless, in view of the fact that this violation is always observed in an obstruent, it is not a severe violation of SSP.
universal. It is applicable to all languages, though some minor exceptions may arise in some cases. As we will see presently, these two principles play a crucial role in the formation of reduplication patterns in Chinese.

4.2. Formation of progressive reduplication

As shown in Chapter Two above, there is a kind of progressive reduplication pattern in OC which virtually expresses two kinds of meanings, SMALLNESS and VIVIDNESS, thereby presenting a correspondence between phonological pattern and meaning. Given this correspondence, we cannot help asking what determines it; in other words, the question to be asked here is how this progressive pattern takes shape from the point of view of the reduplication process. I shall make a proposal to account for the formation of this pattern in terms of the interaction between phonology and morphology.

Let us start the discussion with respect to the very beginning of the process. In view of the fact that progressive reduplication denotes SMALLNESS and VIVIDNESS, it is naturally assumed that it is due to such semantic categories that reduplication is motivated. For the sake of convenient reference, the formulation of this progressive pattern (in the case of base syllable with non-liquid onset), proposed in Chapter Two, is repeated in (8) below.

(8) Progressive reduplication pattern in the case of base syllable with non-liquid onset in OC (σ: syllable; O: onset; R: rhyme; subscript letter for identification of the same segments; L: liquid):

\[
\text{Base} \quad \rightarrow \quad \text{Base} \quad + \quad \text{Reduplicant}
\]

\[
\begin{array}{c}
\sigma_x \\
O_x \\
\text{non-L}
\end{array} 
\begin{array}{c}
R_y \\
L
\end{array} 
\begin{array}{c}
\sigma_y \\
O_y \\
\text{non-L}
\end{array} 
\begin{array}{c}
R_y \\
L
\end{array} 
\begin{array}{c}
\sigma_w \\
O_z \\
R_y \\
L
\end{array}
\]

This process is of course not accomplished in one step. Instead, as mentioned in Chapter One and Chapter Two above, several steps are involved. Simply speaking, the base is totally reduplicated at first, and then the new form with two identical syllables undergoes some modification in shape under the control of some morphological and phonological constraints. I
shall demonstrate this whole process by taking one example. The example is fúyóu 蛲蜓 *bèw lèw > EMC buw juw, ‘larval mayfly’, already mentioned in (2a) and (3) in Chapter Two.

In early times, Chinese people came to identify a kind of insect which can float on the surface of water (‘larval mayfly’) and tried to name it. Since the size of this kind of insect is very tiny and reduplication was used for indicating SMALLNESS, they unknowingly decided to signal it by resorting to reduplication. What they did next was to search for a base due to the requirements of reduplication. Among a number of choices of characteristics that the insect has, they happened to settle on the characteristic ‘floating’, which is denoted by the monosyllabic form fú 浮 *bèw in OC. Total reduplication of the base form *bèw would give *bèw bèw. Crucially, the semantic relationship between ‘floating’ and the supposedly denoted meaning (‘larval mayfly’) by the reduplication form is very loose and random – this is the reason why this kind of base is called a quasi-base (see the relevant discussion in Chapter Two for detail). At this point, people may not be able to identify what the base is or will perhaps not believe fú 浮 *bèw could be the base. This opaque situation brings a severe consequence; that is, speakers of the language might treat this reduplication form as a non-decomposable form in terms of semantic significance, thereby identifying it as monomorphemic. Thus, to the speakers of the language, it seems to be a case in which one meaning is denoted by two syllables. Obviously, this violates OOP. Some modification must take place in order to satisfy this principle. Expressing a meaning is the only purpose of this reduplication process, and thus this meaning cannot be modified or changed. Given this condition, the modification can only be achieved through the phonological component. As we know, the reduplication mechanism in Chinese must produce two syllables.\(^{21}\) As such, our only option is to modify these two syllables and make them sound as much as possible like one syllable. Speculating in terms of sonority, this auditory impression is probably made possible in three ways: one is to make the two sonority peaks, representing two syllables, closer by cutting off the coda of the first syllable or the initial of the second syllable; the second is to lower or raise one of the two sonority peaks; the third one is to raise the sonority degree

\(^{21}\) Pulleyblank (1991b) proposes that a voiceless obstruent is possibly reduplicated, thereby giving rise to an aspirated consonant, in the early stage of Chinese. This theory actually is based on the assumption that OC could have “presyllables” or “sesqui-syllable” (like Mon-Khmer languages). This hypothesized reduplication is not under consideration in the present discussion.
between the two sonority peaks. There are many ways to achieve the desired goal. However, only one is used in OC. Let us refer to the hypotheses in (9) below.

(9) Hypotheses of modifications for *bèw bèw (two identical syllables at the first stage of reduplication which eventually gave rise to fùyóu 妃嬦 *bèw lèw > EMC buw juw, ‘larval mayfly’)

**Hypothesis One:** deleting the coda (ending) of the first syllable: *bè bèw

In Hypothesis One, to make the two sonority peaks closer, the coda (ending) of the first syllable is deleted. There are several problems for this hypothesis. One of them is that the first syllable (one) is not allowed by the OC syllable template; there is no CV syllable with content/lexical meaning in OC. Another problem is that the valley between the two sonority peaks is still very deep, indicating that the two syllables may not sound very much like one.

**Hypothesis two:** deleting the onset of the second syllable: *bèw èw

In this hypothesis, the second syllable is reduced to a form of VC, and the valley between the two sonority peaks gets shallowed. As such, the two syllables possibly sound more like one. However, there is no VC syllable in the OC syllable inventory and each OC syllable must have an onset. Thus, this hypothesis cannot stand, either.
Hypothesis 3: replacing the onset of the second syllable with *?-: *bèw ?èw

This hypothesis shows a glottal stop replacing the onset of the second syllable. In OC phonology, whenever a syllable happens to be onsetless during a process, the glottal stop will always automatically arise in that empty onset position (Pulleyblank 1996). Thus we can see that this hypothesis is quite possible. However, it is not actually the case. The only reason is that this replacement fails to raise the sonority level. Both labial stop *b- and glottal stop are attested in OC phonological system but they are grade one segments in sonority scale.

Hypothesis 4: replacing the onset of the second syllable with *w-: *bèw wèw

Here the glide *w- serves as the onset of the second syllable. This hypothesis looks very good since *w- does exist in the OC onset inventory on one hand and on the other hand the occurrence of *w- raises the sonority level making the two syllables sound more like one syllable. This however, is actually not attested. The reason is that in terms of distinctive features *w- has a minus value for the feature [consonantal]. As is generally recognized in all languages, segments with [+consonantal] are preferred in the onset position over segments with [-consonantal]. This generalization is of course not a universal constraint which could block segments with [-

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22 There is a controversy with respect to the sonority of the glottal stop ?. Since the stop in the sonority scale "stop-
consonantal] in the onset position; instead, it is a ubiquitous tendency which reflects an endeavor to pursue a well-formed onset. As far as the candidate *w- is concerned, in recognizing that this segment and its cognate vowel [u] have the same features and differ simply in terms of their nuclear, nonnuclear position (e.g., Kenstowicz 1994), it should be assigned the feature element [-consonantal]. Thus the tendencies regarding well-formed onsets are not in favour of the occurrence of *w-. At this juncture, we can see that we have a case of competition. On one hand, the position needs a segment like *w- with a high degree of sonority; on the other hand, the tendency regarding well-formed onsets does not like this segment due to its minus value for [consonantal]. Because *w- is ruled out, we have to assume such a ranking as follows: the tendency of well-formed onsets is ranked above the requirement for higher sonority.

**Hypothesis 5:** replacing the onset of the second syllable with *l: *bɛw lɛw

The fifth hypothesis is the attested one. There are three reasons in favor of this hypothesis. First, both syllables are attested in the OC syllable inventory; thus they satisfy the OC syllable template. Second, since the occurrence of the liquid *l- raises the sonority level from grade 1 to grade 3, the two sonority peaks look closer; this modification therefore should result in an auditory impression that the two syllables sound like one syllable. Third, unlike *w- seen in the fourth hypothesis, the liquid *l- is consonantal, generally a well-formed onset. At the same time, the liquid *l- is the most sonorous consonantal segment; thus there is no better consonant available for this purpose. In short, the rising of the sonority level between the two sonority peaks obscures the distinction between the two syllables. As such, the two syllables will sound like one syllable, to some extent. Therefore, this new disyllabic reduplication form, with just one meaning, is still valid under the OOP.

\[ fricative-nasal-liquid \] is the lowest one, I have this stop assigned with the lest sonorous value.
Up to this point, I have developed an account of how the reduplication form fûyóu is produced. This is just an example. All progressive reduplication forms with *r- or *l- in the second syllable and simultaneously without such a liquid in the first syllable can be accounted for in the same way. In line with this analysis, another relative case, instantiated in (14) of Chapter Two, can be also accounted for. The case is that when the quasi-base form (=the first syllable in the reduplication form) takes a liquid (*l- or r-) as its onset, the change occurring in the reduplicant syllable happens not to its initial but to its final, presenting a *ə/a or *a/ə contrast with respect to the two main vowels. It has been pointed out that such an “abnormal” change results from pressure to avoid conflict with the total reduplication pattern. As for the occurrence of the *ə/a or *a/ə contrast, the reason is that /a/ is higher than /ə/ in terms of their sonority and the distribution of these two different vowels in the two syllables could give rise to an impression that the reduplication word composed of two syllables sounds like one syllable, to some extent (see the discussion above). Again, OOP is more or less satisfied.

From the above discussion, we can see that so-called progressive pattern is not an arbitrary template which is stipulated in advance. Instead, it is just a natural result of an interaction of morphology and phonology.

4.3. Formation of retrogressive pattern

Chapter Two has shown that retrogressive reduplication is applicable to verbs, expressing a sense of repetition mainly with respect to frequently-operated activities. Thus it can be seen that retrogressive reduplication is motivated by the semantic significance. As far as phonological alternation is concerned, the crucial characteristic is that in the case of the feature element [+round] rooted in the final of the base syllable, the final of the reduplicant syllable will have a negative value for the feature [round]; in the case of no such feature assignment in the base syllable, the reduplicant syllable will distinguish itself from the base in another way. And the

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23 In chapter Two, I also revealed some miscellaneous cases in which the initial of the second syllable within the progressive reduplication word appears to be *m-, *n-, *ŋ-, *ɵ-, *ŋ- and cluster with *r-. These cases can not be simply explained in terms of OOP and SSP and a good understanding of these cases would require further investigation (I have made some proposals in Chapter Two). Nevertheless, since the progressive reduplication pattern, demonstrated in (8) above, is the dominant one and many parallel cases have been attested in modern languages, the existence of these cases does not constitute a refutation of the analysis made above.
issues to be addressed here are how this retrogressive pattern is formed and what kind of factors are responsible for determining the way in which the base syllable and reduplicant syllable are principally distinguished.

To understand the whole derivative process, we first need to understand that the base is semantically related to the reduplicative form. In taking zhānzhuān 转 转 ‘keep tossing and turning endlessly’ (see the detail in Chapter Two) as an example, the semantic relationship between the base zhuan 轉 ‘turn’ and the reduplicative form is clearly discernible. Such a transparent semantic relation is very significant since speakers of the language thus are able to decompose the disyllabic reduplicative form zhānzhuān – they may mentally hold the view that zhuan 轉 is responsible for the semantic implication of zhānzhuān while the prefix zhān 轉 is responsible for the sense of REPETITION. Since the speakers could make such an analysis of zhānzhuān, what is expressed by zhānzhuān to them is not the meaning of one morpheme, but two meanings denoted by two morphemes. Recall that OOP requires that one meaning should be denoted by just one syllable and one syllable should be always a bearer of a meaning, and thus we can see that OOP will not play a part with respect to the formation of this reduplication pattern; that is, it will not be the case that this disyllabic form will undergo some phonological modification according to OOP.

Nevertheless, what is eventually produced in this case is actually zhānzhuān 轉 轉, rather than zhuānzhuān 轉 轉. This indicates that this form has undergone some phonological modification. What happened? This has to be explained from another angle. As demonstrated in Chapter Three above, there is a total reduplication pattern in which the base syllable is duplicated as two identical syllables without any further phonological modification. More significantly, what is expressed by this total reduplication pattern is a kind of VIVID IMPRESSION, which is different from the REPETITION denoted by a reduplication form like zhuānzhuān. On the other hand, the total reduplication pattern came to be established quite early. In the Western Zhou bronze inscriptions, total reduplication forms such as múmù 穆穆 ‘(impression of something solemn and dignified)’, huánhuan 恒恒 ‘(impression of something valiant)’, and xiànxìan 憨憨 ‘(impression of something elated)’ are already existing. The total reduplication forms are also very common in OC. In the Shiijing alone, for instance, it is found that there are 353 reduplicative words of this kind (Xiang Xi 1980). Thus, we can see that the total reduplication pattern is a fixed and prominent pattern in OC. As such, this reduplication
pattern should have exerted pressure which, as a whole, does not allow other kinds of reduplication with different semantic significance to fall into the total reduplication pattern; in other words, as long as the base syllable is duplicated as two identical syllables during reduplication, what is produced in this process can only be a VIVID IMPRESSION. With such an exclusionary force in the internal system of OC reduplication, the reduplicative form *zhuānzhuān 轉轉 (an assumed form in the first stage of the retrogressive reduplication) has to undergo further phonological modification in order to be successful in expressing the expected meaning REPETITION.

The above argument is partially based on an assumption that one kind of phonological reduplication pattern generally has its own corresponding semantic implication; conversely, one kind of meaning is usually denoted by one specific reduplication pattern.24 For the present

24 This assumption is generally attested in the reduplication system of standard Mandarin, in which meanings and reduplication patterns correspond to one another respectively (see footnote 38 below in this chapter for the detail). As for the OC case, this assumption is also basically what is attested. However, we need to know that the meaning involved in the reduplication process should be understood in terms of two layers. The meaning in one layer could refer to the meaning terminally attested in the surface reduplication forms (terminal meaning); the meaning in the other layer could refer to the meaning active in the medial stage of the process (medial meaning). These two meanings are sometimes consistent, but sometimes they are not. Let us review a modern example to explain this distinction. As shown in (41a) in Chapter Two above, in Chinese Fuzhou dialect, so?z, 嘀 means ‘to suck’. The reduplication based on this base form gives rise to so?z, so?z which means ‘nipple (of a feeding bottle)’. In this example, we can see that the terminal meaning can be characterized by SMALLNESS while the medial meaning should be a verbal one with a sense of REPETITION. In the OC reduplication form *tsak*tsak *tsak > EMC tsik tsuwk, ‘looper, inchworm’, illustrated in Chapter Two, the base form jiu 就 is a verb, meaning ‘be close to, approach’. At the half-way stage of the reduplication, the verbal sense REPETITION is active, but the terminal meaning ‘looper, inchworm’ should be marked with SMALLNESS. When we think about the assumption that meanings and patterns correspond to each other, we should take this distinction between terminal and medial into account. Finally, one case which can not be swept under the carpet is found in the forms *xūyu > EMC sia jia (Zhuangzi) ‘moment’ and *saj saq > sia sua, ‘a little while’ (Mengzi). From these two forms, we can see that they have the same terminal meaning and the same base, but xūyu falls into the progressive pattern whereas siaj into the retrogressive pattern. Frankly speaking, I have not come up with a certain conclusion. The following explanation, however, comes to mind. I think that in the formation of reduplication words, the relationship between the meaning of the base and that of the reduplication word can be viewed from different angles. For example, fu 漂 is a verb meaning ‘float’. This meaning can be considered a property owned by the insect ‘larval mayfly’; thus reduplication operating on the basis of fu gives rise to fuyou 漂漂 *bew lew > EMC buw juw, ‘larval mayfly’, a progressive reduplication word with a sense of
purpose, this assumption is still needed but one issue must be first clarified. Simply speaking, if reduplication forms with different meanings present a complementary distribution with respect to their syntactic behavior, then these forms still possibly fall into the same pattern. For instance, reduplicative forms with SMALLNESS are nouns, e.g., tángláng 螳 螂 ‘mantis’, while reduplicative forms with VIVIDNESS are adjectives, e.g., xiāngyáng 相 羊 ‘description of roaming’. These two kinds of reduplication are potentially distinguished in accordance with their different syntactic behaviors. Thus they are still possibly denoted by the same reduplication pattern, that is, the progressive pattern. However, this is not the case regarding reduplicative forms which connote VIVID IMPRESSION, e.g., níní 泥 泥 ‘description of luxuriance’, and reduplicative forms which connote REPETITION, e.g., qíngkòng 控控 ‘to control a horse in various ways’. The crucial point is that these two kinds of reduplication frequently serve as the same kind of syntactic constituent, mainly a predicate. It is just because of this conflict in terms of syntactic behavior that causes zhuanzhuan 转转 to come under pressure from the total reduplication pattern, and thus zhuanzhuan should be phonologically modified.\footnote{A similar case is revealed in Yip (1993b, 1995, 1998). For example, Javanese lali ‘forget’ reduplicates as lola-lali ‘id. (habitual-repetitive)’. That a in the first syllable of the base is not properly repeated in the reduplicant because of a kind of dissipilatory force against such a repetition. Yip argues that in terms of Optimality Theory (OT) a class of dissipilatory constraints, shared by morphology and phonology, is responsible for cases in which the reduplicant and base are required to differ in some characteristics.}

Moreover, if zhuanzhuan remains unchanged with respect to its phonological shape, then what is expressed by it will be VIVID IMPRESSION rather than REPETITION. Here is an example to support this point. chú 處, yán 言, and yǔ 語 are three verbs in OC, meaning ‘dwell’, ‘speak’, and ‘remark’ respectively. In Shijing 250, these three verbs are duplicated as three total reduplication words chuchú 處處, yányán 言言, and yūyū 語語, which are employed to express
a vivid impression motivated by the description of people's happy living and speaking. Crucially, these three words do not carry a sense of REPETITION, instead, a sense of VIVID IMPRESSION.

All the theoretical and empirical evidence supports the hypothesis that zhuānzhuān, a form which is supposed to denote a sense of REPETITION, must undergo a further phonological modification. Now I shall make a reconstruction of how this phonological modification was achieved.

The first question to be clarified is that it is appropriate to change just one syllable of the disyllabic form zhuānzhuān. As pointed out above, the base and the reduplication form are semantically related in a transparent manner. If both syllables are phonologically changed during the reduplication, such a transparent semantic relationship will not exist any longer. Thus, one syllable must remain intact, leaving the other syllable subject to phonological modification. This argument is also supported from an economic point of view — now that the change with respect to one syllable is effective enough to distinguish this kind of reduplication from the total reduplication pattern, it is not necessary to change both. Thus, we come to the conclusion that only one syllable should be undergoing phonological modification.

The following issue to be addressed is which syllable should be the target for this phonological modification. Given the fact that the first syllable is actually the target, our goal is to reveal why the first syllable, rather than the second syllable, is selected as the target. Such a selection may be determined by several phonological factors, but the most important one is considered to be what kind of stress pattern is possibly involved, since it has been widely shown that fully-stressed syllables tend to remain intact whereas non-stressed or weakly-stressed syllables are more easily subject to modification with respect to phonological values. As such, for instance, in Canadian [kəˈneɪdɪən], the first main vowel of the first syllable is reduced to the schwa while the main vowel in the second syllable is fully articulated as əı. In contrast, the main vowel of the first syllable in Canada [ˈkænədə] is fully articulated as æ while the main vowel of the second syllable is reduced to the schwa. The cause for this alternation is closely related to stress patterns, that is, it is primary stress that results in the fuller pronunciations əı and æ, while failure to have a stress gives rise to reduction of the schwa. Another instance can be found in Alabama [ˌæləˈbæmə], in which the second syllable and fourth syllable - the ones perceived to have the weakest prominence - are reduced to schwa, while the first and third - ones perceived to have secondary and primary prominence respectively - have full [æ] vowels. Nancowry also presents a similar case. As described in Alderete et al. (1999), roots in Nancowry are usually monosyllabic, but occasionally disyllabic. Stress falls on the last (or only)
if we are able to get a good understanding of OC stress patterns, then, it will turn out to be very helpful in thinking through why the first syllable is selected to undergo phonological modification. Nevertheless, since this kind of information is usually not sufficiently reflected in writing systems, especially in morphemic writing systems like the Chinese one, the best way out of this difficulty is possibly to use the modern case for reference. Let us first review the case in modern Chinese (mainly Mandarin) as described in Chao (1976b):

In a close succession of two word-syllables[^27] in Mandarin[^28], there are two stress patterns, apart from expressive intonation or dynamic changes. One is a combination similar to a disyllabic word in French, with both syllables in the second, with full tone on each syllable but slightly greater stress on the second. The other one is a combination of a strongly stressed syllable followed by a very weak and atonic syllable. Western writers often regard the first type as an iambic unit, with the stress on the second syllable, thus unifying the structural word. I think it would be safer to call this a quasi-iamb, since the first syllable is rarely quite unstressed.

Chao reveals that there are two kinds of stress patterns, quasi-iamb and trochee, existing in modern Chinese. This is a generalization which has been widely-accepted though there are still some controversies especially with respect to some concrete cases.[^29] Of course, it is far from satisfactory for our present purpose just to learn that there are two such stress patterns. The crucial point is what kind of factor determines such a distinction? In examining the source data syllable of the root, and never on affixes. The range of permissible phonological contrasts in stressed syllables is much broader than in unstressed syllables: stressed syllables have only the vowels i, u, a (and no nasalized vowels or diphthongs). This reduction of the inventory in unstressed syllables indicates that the unstressed syllables have a strong tendency to be reduced with respect to their phonological values.

[^27]: Chao creates the term “word-syllable” as an alternative for the Chinese term zi 字 and he uses it when this Chinese term cannot be conveniently used. Word-syllable (=the Chinese term zi 字) is a monosyllable and usually, at least for the literate, has a meaning.

[^28]: One can, if one wishes, extend the case to more syllables and for other dialects. (Chao’s own note)

[^29]: We know that in some other writers’ works (e.g., Xu Shirong 1956) Mandarin stress patterns are divided into more categories. From a morphemic point of view however, these patterns should be properly incorporated as two categories (cf., Hirayama 1992), same as what is here summarized by Chao. Another controversy can be seen with regard to the judgement of the degree of stress; that is, which syllable in a binom is more stressed could spark off dispute among scholars. To deal with this problem, one point to be borne in mind is that stress is determined by different factors and therefore we cannot emphasize just one factor. For instance, it is usually considered that a long syllable is more likely to be stressed than short syllables. However, as instantiated in Ladefoged (1993:113), the first syllable in “Russia” is comparatively short, but it does have extra respiratory energy and so it is felt to be stressed.
from Mandarin, it is found that the semantic structure between the two word-syllables in a binom plays an important part in determining the stress pattern. Simply speaking, if the two word-syllables are closely linked in terms of their semantic implications as binoms, then, what is formed will be a trochaic binom; in contrast, if the two word-syllables are relatively loosely united in terms of their semantic implications as a binom, or if the meaning can be predicted by simply combining the meanings of the two word-syllables, then, what is formed will be an quasi-iambic binom. One may not be satisfied with such a distinction due to its theory-neutral terms nevertheless, I feel reasonably sure that the distinction reflects the underlying cause. The question to be urgently solved is how to further define it in a formal way. Let us discuss some examples first. Đông ([turjss]) 東 and xi ([gi55]) 西 are two word-syllables meaning 'east' and 'west' respectively. When they are united together, two meanings with correspondence to two stress patterns are produced. Please look at examples in (10) below. Note that the mark "" indicates that the following syllable is stressed. The example (10c) is quoted from Chao (1976).

(10)

<table>
<thead>
<tr>
<th></th>
<th>word-syllable</th>
<th>binom</th>
<th>stress pattern</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a i</td>
<td>tun55 東 'east'; gi55 西 'west'</td>
<td>tun55 gi55</td>
<td>σ'σ (quasi-amb)</td>
<td>'east and west'</td>
</tr>
<tr>
<td>a ii</td>
<td>tun55 東 'east'; gi55 西 'west'</td>
<td>tun55 gi0</td>
<td>'σσ (trochee)</td>
<td>'thing'</td>
</tr>
<tr>
<td>b i</td>
<td>ku55 姑 'aunt (father’s sister); je35 爺 'grandfather’</td>
<td>ku55 je35</td>
<td>σ'σ (quasi-amb)</td>
<td>‘grandfather’s sister’s husband’</td>
</tr>
<tr>
<td>b ii</td>
<td>ku55 姑 ‘aunt (father’s sister); je35 爺 'grandfather’</td>
<td>ku55 je0</td>
<td>'σσ (trochee)</td>
<td>‘son-in-law’</td>
</tr>
<tr>
<td>c i</td>
<td>tjojwj51 救 'save'; ta55 他 'him’</td>
<td>tjojwj51 ta55</td>
<td>σ'σ (quasi-amb)</td>
<td>‘save him’ (rather than someone else)</td>
</tr>
<tr>
<td>c ii</td>
<td>tjojwj51 救 'save'; ta55 他 'him’</td>
<td>tjojwj51 ta0</td>
<td>'σσ (trochee)</td>
<td>‘save him’</td>
</tr>
</tbody>
</table>

In all the three cases marked by (i), the two word-syllables are clearly corresponding in meaning to the binom; that is, the meaning of the binom can be traced on the basis of the meanings of the two individual word-syllables. Thus it can be seen that the two word-syllables are loosely combined in terms of semantic implications. As a result, the two syllables are both stressed,
with, however, the first syllable being slightly or weakly stressed. Thus, using Chao's terminology, we get a quasi-iamb. By contrast, the three cases marked by (ii) in (10) all present a close semantic structure between the two word-syllables. The evidence is that it is quite hard for us to trace the meaning of the binom on the basis of the meanings of the two individual word-syllables. In (10b.ii), for instance, it cannot be expected to perceive the meaning of the binom ('son-in-law') through learning the meanings of the two word-syllables ('aunt' and 'grandfather'). Thus it can be seen that the two word-syllables have been so closely combined that one cannot decompose them in terms of semantic implications. When there is a correspondence with respect to the semantic structure between the two word-syllables, the binom presents a typical trochee.

The point preliminarily illustrated above can be supported from many other angles. Some of them are as follows. First, the suffix in a binom is always unstressed (always with neutral tone), thereby forming a trochaic form. The suffixes such as zi 子 '(noun suffix)', ér 兒 '(diminutive suffix)', tóu 頭 '(noun suffix)', de 的 '(used to produce a nominal form)', mén 們 '(plural)', mò 摩 '(modal suffix)' can be treated as examples. These suffixes do not denote content/lexical meanings. Suffixes with these meanings are always dependent and they must be affiliated with another root morpheme. Thus, it can be recognized that these suffixes are closely related in meaning with the word that follows. It is because of this that the binoms in question become trochaic. Second, the common speakers of the language are likely to pronounce some binoms as trochaic forms, which are possibly pronounced as quasi-iams by the literati. For example, common speakers usually pronounce Tiānjin 天津 '(the third biggest city in China)' as 't'jan55 tse55; the literati, on the other hand, are inclined to pronounce it as t'jan55 tsein55. The reason is that the literati have more ability or interest in analyzing the two word-syllables of a binom. With a better understanding of the semantic structure, they should have incorporated more binoms into the case in which the two word-syllables are considered to be loosely united in

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30 What is stated here is of course a reflection from the point of view of the broad masses of common speakers of the language since they generally cannot decompose the form in terms of the semantic implications. For scholars in Chinese linguistics, it may be possible to do so. However, it should be noted that the operation of a language basically always follows the grammar built by the majority, rather than the minority, of the speech community.

31 The diminutive suffix ér 兒 in standard Mandarin is always unsyllabic, but in Shunping Mandarin, a Mandarin dialect in the middle Hebei, this suffix is sometimes still syllabic and thus we have such trochaic compounds as p'ēr 31 rō55 (椏兒) 'shed' and tāo55 wēr (套兒) 'lasso, loop' (Sun, Jingtao 1998b).
meaning. Third, a parallel case has been found in other dialects. As revealed in Kennedy (1953a), in Tangqi 塘棲 dialect, a Wu dialect in the north Zhejiang, it is recognized that there are two stress patterns, the ‘COOK SOUP’ pattern and the ‘HIGH MOUNTAIN’ pattern, which can be compared with the quasi-iamb and trochee in Mandarin respectively. Furthermore, Kennedy points out that the ‘COOK SOUP’ pattern (quasi-iamb) goes with verb-object expression and others, while the ‘HIGH MOUNTAIN’ pattern (trochee) goes with modifier-head expression and others. I shall cite one example given by Kennedy. The word-syllable 爱 (ai 愛) means ‘love’ and 人 (rén 人) means ‘person’. In combining them together, if it is a verb-object expression (‘to love people’), then it takes the ‘COOK SOUP’ pattern (quasi-iamb); if it is a modifier-head expression (‘sweet-heart (loved person’) ), it takes the ‘HIGH MOUNTAIN’ pattern (trochee). This is understandable. The two word-syllables in the verb-object expression are loosely combined in meaning since the semantic structure is so transparent that one generally can predict the meaning of the whole binom simply by combining the activity and patient denoted by the verb and object respectively. By contrast, two word-syllables in modifier-head expressions are closely related in meaning: what is signaled by a modifier-head expression is just one referent. Therefore, people of Tangqi may be reluctant (thinking it unnecessary) or unable to decompose the binom in terms of the meanings of the component parts. As such, to them, the semantic relationship between the two word-syllables is quite close, even already fused together. Thus, they have naturally taken the trochaic stress pattern. Again, it is semantic significance that determines the stress patterns.

With this understanding of the stress patterns in modern Chinese, we are able to consider the OC case. One basic consideration is that stress patterns in modern Chinese are possibly traced back to OC due mainly to the inherent relation between the two forms of the language. Let us first consider the binoms in OC. As a result of many investigations, it has been found that, in comparison with modern Chinese, OC presents fewer cases in which two word-syllables are closely linked in meaning. For instance, according to Ma Zhen (1980-81), the disyllabic forms in pre-Qin, except for so-called undecomposable binoms, are mostly composed of two semantically-loosely-united word-syllables. In line with the consideration that only semantically-

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32 This case seems similar to what we can find in English, e.g., 'perfect (adj.) and per' fect (verb).

33 Most of these forms are actually possibly decomposed in meaning. See the relevant part of the discussion on OOP above. In addition, many reduplication forms were traditionally considered undecomposable.
closely-united binoms give rise to trochees, it can be assumed that there are not many trochaic binoms, if there were any. Consequently, we can hypothesize that most OC binoms are quite possibly quasi-iambic forms.  

Let us look at some evidence to support this hypothesis. First of all, Cantonese is commonly considered to have kept more characteristics of ancient Chinese. Interestingly, it has been found that in Guangzhou dialect (standard Cantonese) there are basically no typical trochees (Lin and Wang 1992). On the other hand, it seems true that the quasi-iamb is very common in that dialect. The same holds true in another comparatively conservative dialect, the Min dialect. One immediately noticeable fact emerges from an examination of the data collected in Beijing (1964); a number of disyllabic words which fall into the trochaic stress pattern in many Mandarin dialects (including standard Mandarin) and some other dialects but are not in the trochaic pattern in Min dialects (Fuzhou, Xiamen, and Chaozhou) as well as Cantonese. According to my uncompleted investigation, these words should be incorporated into a quasi-iambic or even iambic pattern. One case can be brought in to test this tentative conclusion. As we know, Mandarin in Taiwan is mainly surrounded by Min dialects; thus some characteristics of Min dialects are likewise found in Taiwan Mandarin. Stress pattern is a prominent case. In our experience with Taiwan Mandarin, one impression is the abundance of iambic words. For instance, bà-ba ((pā51páo65)) 爸爸 ‘father’ is pronounced by some of Taiwan Mandarin speakers as pā22pā55, and mèi-mei 妹妹 ‘younger sister’ is pronounced as mej22mej55. Another example is shén-mo [gən35mo55] 什（甚）麼 ‘what’. This disyllabic word in standard Mandarin is a typical trochee and I do not think people can tell what kind of tone the second syllable has. In Taiwan Mandarin, this word is usually pronounced as [gən212mo55]; one may doubt determination of this form as an iamb, but it is clearly not a trochee, possibly a quasi-iamb. The second syllables are obviously stressed. Second, quasi-iambs should be recognized as a default stress pattern. This point can be supported by the following fact. In Mandarin, disyllabic loan words (e.g., nilóng 尼龍 < ‘nylon’) and newly-created compounds (e.g., jī 激 ‘sharp, fierce’ + guāng 光 ‘light’ → jī

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34 In assuming that most OC binoms are possibly quasi-iambic forms, one question coming to my mind is what will happen when these quasi-iambic forms appear in poem lines since the stress pattern, either “light-heavy” or “heavy-light”, could be observed in poem lines of OC (see Takashima 1999). This is a question worthy of discussion but it has to be left for another occasion.

35 For instance, although checked syllables, which were ever existing in OC and MC, have disappeared in many modern Chinese dialects, they still exist in Cantonese.
guăng ‘laser’) are almost always quasi-iambic forms. This shows that people have possibly assumed that there is a clear semantic structure in a binom which is unknown to them; thus, they lose the ability to decide which one is the proper stress pattern. Under this condition, the default (more unmarked) stress pattern occurs. The default stress pattern should have had a long history and thus it is not a surprise to frequently meet it in OC. Third, many Mandarin trochaic binoms, which are carried from ancient times, can be proven not to be so in ancient Chinese. For instance, yī·shāng 衣裳 ‘clothing’ in Mandarin is a typical trochaic form, most people do not know what tone ·shāng 衣裳 has. However, Du Fu’s (712-770) poem provides evidence that this was not a typical trochee in Middle Chinese since in one of his poems ·shāng 衣裳 ‘skirt (for both men and women)’ is placed in a rhyme position and it must be fully stressed with a level tone.36

In summation, we are reasonably sure that most OC binoms are quasi-iambic forms, the same as what is found in Min dialects and Cantonese. Besides, if there are two stress patterns in OC, the selection between them should depend on how the two word-syllables correspond in meaning to the binom.

After this discussion on stress patterns, we are able to advance our account for the formation of retrogressive reduplication. In the above discussion we have concluded that two identical syllables, still taking zhuǎn zhuǎn 転 転 as an example, must undergo phonological modification. Consequently, the question to be answered is which one should be the target for such a modification. Since more unstressed syllables are more likely to be reduced in phonological value, taking the stress pattern into consideration will be helpful in explaining this selection.

We can simply say that OC binoms all have a quasi-iambic stress pattern; thus, in the case of zhuǎn zhuǎn, the first syllable should be relatively weak. We can also come to the same conclusion by considering the semantic relationship between the two word-syllables and the binom. Let us have a look at the example. Zhuǎn 転 means ‘turn’ and the meaning of the binom (eventually zhān·zhuǎn 転 転) is supposed to be ‘toss and turn endlessly’. Under this condition, we can see that the binom and component parts are clearly related in meaning. In other words, the meaning of the binom can be predicted simply by combining the semantic implications of the component parts. Given such a clear semantic structure, this case is suitably compared with gū

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36 The original line is chu wen tilei man yichäng 初聞涕淚溝衣裳 ‘upon hearing (the news), my tears streamed down, wetting my vesture.’
yé 姑爺 ('aunt' + 'grandfather' ι 'grandfather's sister's husband') and ?ea nyin (quasi-iambic stress pattern) 愛人 ('to love' + 'person' ι 'to love person'), rather than gū-ye 姑爺 ('aunt' + 'grandfather' ι 'son-in-law') and ?ea nyin (trochaic stress pattern) 愛人 ('to love' + 'person' ι 'sweetheart'). On the basis of this parallel, it can be hypothesized that zhuanzhuan should be incorporated into the quasi-iambic stress pattern; that is, the first syllable should be weakly stressed whereas the second syllable is normally stressed. Since the syllable with weak stress has been proven susceptible to change or is harder to maintain intact, and simultaneously this binom has been compelled to change with respect to one of the two syllables under pressure from the systematic requirement, it is inevitable that the first syllable must undergo phonological modification. What has been attested is that the first syllable is shifted to zhān (reduplicant) while the second syllable remains unchanged (base). As a result, a retrogressive reduplication pattern is formed.37

I shall now address the last question with regard to the formation of the retrogressive reduplication pattern; that is, how the phonological modification on the first syllable is achieved. As described in Chapter Two, this phonological modification is distinguished in dependence on the [+round]/[-round] contrast with respect to the rhyme of the original syllable. I shall now discuss the case of the original syllable with feature element [+round]. Let us review the examples discussed in Chapter Two which are listed together in (11) below. Note that OC reconstruction forms are placed at the beginning for easy comparison and the other details regarding these forms can be referred to in Chapter Two above.

(11) OC retrogressive reduplication (base with the feature-element [+round])

a. *k`h`j`án? k`h`w`án? (qiānquān 纟縈) ‘keep on chopping and changing; get tangled; deeply attached’

Evidence supporting this analysis can be found in Fuzhou Min dialect, where retrogressive reduplication is also attested. Look at the following two examples.

<table>
<thead>
<tr>
<th>base</th>
<th>glossary</th>
<th>reduplicative form</th>
<th>glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kuon31 抿</td>
<td>‘to roll up’</td>
<td>kion32 kuon31</td>
<td>‘just roll up’</td>
</tr>
<tr>
<td>b. p`uo244 聖</td>
<td>‘to shine upon’</td>
<td>p<code>ion32 p</code>uo244</td>
<td>‘just shine upon’</td>
</tr>
</tbody>
</table>

In my investigation, it is found that these two binoms all present a quasi-iambic stress pattern, with the first syllable weakly stressed and second syllable normally stressed. Consequently, their first syllable has been changed, likewise forming retrogressive reduplication words.

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Recall that in a preceding stage of this reduplication process the first syllable was identical to the second syllable (we believe that the monosyllabic base is duplicated as two identical syllables at the first stage) and thus the surface form of the first syllable can be alternatively considered a
derivative of the second syllable. Thus, we can reconstruct the phonological change happening to the first syllable simply by comparing the first syllable with the second syllable. Actually such a comparison has been preliminarily done in Chapter Two and it was found that what happens to the first syllable is that the feature-element [+round] is shifted to the feature-element [-round]. Now let us have a closer look at this shift.

In (11a-f), the syllables in each pair differ only with respect to their ‘medial’ -j- in the first syllable and -w- in the second syllable. This j/w contrast is also attested in (11g-k), though it is realized in the ending positions, either as the coda or as secondary articulation of the coda. From the point of view of distinctive features, j/w is not a minimal pair; they are not only distinguished in terms of a [-round]/[+round] contrast, but also in terms of a [-back]/[+back] contrast. Given this, why is it still suitable to characterize the shift from the second syllable to the first syllable as [-round]/[+round]? The answer lies in the OC phonological system. By the criterion of the [-round]/[+round] contrast, the counterparts of *-wàn?, *-wèn, and *-êkʷ should be *-ʔân?, *-ʔèn, and *-êkʷ respectively. However, these supposed counterparts do not actually exist in the OC phonological system; thus -j- or -j automatically surface, still keeping the [-round]/[+round] contrast. This phonotactic explanation works well in most of the cases in (11a-k), but not in the two cases *bøj bêw (11g) and *dözêj dzêw (11h). Obviously, the supposed counterpart for *-êw objectively exists in OC phonology (*-êw), but what is actually chosen is *-êj, rather than *-êw (written as *-êy in the OC reconstruction; see Chapter One). To understand why the attested form is *-êj rather than *-êw in realizing the [-round]/[+round] contrast in retrogressive reduplication word, we need to know that the [-round]/[+round] alternation is the dominant one and the simultaneous change involving the feature [back] ([-back] for *-j and [+back] for *-w) is no more than a subordinate one since the segment with the feature-element [-round] has a strong tendency to surface as a segment with [-back]. In terms of the grounding theory (Archangeli and Pulleyblank 1994)\(^{38}\), we may explain this subordinate change through such a positive implication in human languages, it is widely observed that the presence of one feature-element simultaneously implies presence or absence of another feature-element. The implication of this kind is rooted in physical properties of the vocal tract or speech signal. For instance, constriction of the tongue in one area requires its expansion in another and, conversely, expansion of the tongue in one area requires its constriction in another. To account for the implicational
implicational statement as “if [-round] then [-back]”. Thus the modification occurring in (11g, h) can be formulated as in (12) below (taking 11g as an example).

(12) a. bêw bêw two identical syllables in the first stage of reduplication
    b. bêq bêw realizing [-round]/[+round] contrast under control of retrogressive reduplication pattern
    c. bêj bêw grounding rule: if [-round] then [-back]

In (11t), syllables in each pair are distinguished through a j/q contrast in coda position, either as full segments or secondary articulation. Obviously, the minimal pair j and q differ only with respect to [-round]/[+round].

In (11u) the “medial” -j- does not exist in the first syllable though it is supposed to do so since -w- occurs in the second syllable. This is actually not a case against the general [-round]/[+round] contrast. First, this 0/w contrast is still in keeping with the [-round]/[+round] contrast since a zero “medial” is naturally considered assigned with the feature-element [-round]. Second, the absence of -j- in the first syllable is possibly accounted for in terms of the OC phonological system. In particular, there does not seem to be evidence showing that there is such a syllable as *trjân? in the OC phonological system. Thus it can be seen that it is the phonotactic constraint that blocks the occurrence of -j- in the first syllable.

relationship between the feature-elements on the ground of their phonetic substance is the main task of the grounding theory.

39 I shall try to illustrate this point with regard to the reconstruction of zhân 輕 (EMC trian'). This syllable belongs in the xián 銜 rhyme in MC where chongniu syllables are recognized; thus we do not know which Grade, III or IV, zhân should be incorporated into since chongniu distinction can be clearly discerned only in syllables with back initials and labials and the initial of zhân is a coronal. Consequently, there is no reason to make a decision that we should or should not reconstruct -j- in the OC form of zhân (Grade IV syllables should be assigned with *-j- in OC). We may consult with the Yunjing, but it does not help either. That zhân is actually put in Grade III in the Yunjing does not necessarily mean it should be so since the Grade IV grid is already occupied by a "pure" grade IV word diân 點. However, xiéshēng evidence turns out to be helpful in thinking through this problem. In the case of coronal initials, there is only one correspondence for Type B syllables, that is, rhyme xián, Grade III. Thus it is not reasonable to reconstruct -j- for this syllable. If there are Type A syllables related by xiéshēng, however, it may still be possible to reconstruct *-j-. However, there is an additional difficulty concerning whether it is right to think that these kinds of
The first syllables in the last three binoms (11v-x) are actually different from the other examples in (11) since in accordance with parallels found in many other examples they are supposed to be *kâk, *lājs, and *k̪haj, which all exist in the OC phonological system. In any event, however, all four of these attested forms crucially present a [-round]/[+round] contrast between the first syllable and the second syllable.

All in (11) show that the two syllables in each pair can be commonly characterized by a [-round]/[+round] distinction. In association with what we have above identified about the preceding stage of the retrogressive reduplication process, we can see that the phonological modification on the first syllable is achieved by means of a feature-element shift from [+round] to [-round]. This is a convincing conclusion but it simultaneously raises a new question: why this phonological modification is accomplished by this method.

As illustrated above, the first syllable must undergo phonological modification because the two syllables need to be phonologically differentiated from one another in order to be distinguished from other reduplication patterns. Theoretically, any kind of phonological change would work for this purpose. However, it can be imagined that the regulated change will be preferred on the basis of empirical and theoretical evidence. There are possibly several ways to take for this purpose. A feature distinction is actually selected because as a more basic unit, one feature is easily applied to many segments and features with binary values more easily represent a systematic change. Such properties, which the features normally have, make features qualified for the responsibility of establishing a method regulated modification. Nevertheless, given the fact that there are many features, the question is by what kind of reason is the feature [round] selected? In order to get a good understanding of this question, we need to know what the requirement for this feature selection is and we also need to investigate the properties of distinctive features in association with the OC phonological system.

As was just pointed out, what is needed at this point is a binary feature which is expectedly able to change syllables, as many as possible, simply by presenting a plus or minus value, since this is the only way to get a regulated pattern during the phonological modification of the first

Type A syllables (with high vowels in EMC) actually do not result from OC post-initial *-j- but such OC prefixes as *k- in the case of shã 殺, which might also apply to shân 山. Thus, it is not suitable to reconstruct *-j- for the particular character zhân 軒; moreover, there is not even evidence to say there is such a syllable (*trjân?) in the OC phonological system.

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syllable. It should be noted that there will no such distinctive features which could be consistently applied in all OC syllables, but the language nevertheless now recruits the best one. In our OC phonological system just two vowels, a and θ, are included. It is possible to employ one feature such as [back], [high], and [low] to distinguish these two vowels (a kind of ablaut), and thus, syllables (each OC syllable must have either a or θ). The defect of this proposal is that less than half of the syllables will be possibly affected.\(^{40}\) [Nasal] is another feature that is possibly employed. Recall, however, that only one-third of a total of thirty-one OC rhymes, amounting to one-third of all OC syllables, can be applied in this minus/plus distinction for [nasal]\(^{41}\), and thus it can be seen that [nasal] is not an ideal feature for the purpose of distinguishing as many syllables as possible. An investigation of this sort is also made into many other distinctive features, and the result, from our present point of view, is even worse than those in the above proposals. Eventually, it was found that the best distinctive feature for the present purpose turns out to be [round]. In reviewing the OC rhyme system, there are eight rhymes ending with a rounded segment; thus, the feature [round] is available in more than a quarter of all OC syllables. In those syllables without a rounded segment in the ending position, the segment */-w-*, a so-called “medial”, frequently occurs. In addition, since the place feature LABIAL implies the feature [round], the total of OC syllables with [round] will be greatly enlarged because there are four OC rhymes ending with -p or -m. In any event, just taking the rounded endings and “medials” into account, it will be seen that more than half of the OC syllables present the feature-element [+round]. By making use of this widely-distributed distinctive feature in the OC syllable inventory, the first syllables in most of the retrogressive reduplication cases will potentially change themselves simply by presenting the minus value for the feature in

\(^{40}\) We do find some examples (see (37) in Chapter Two above), in which there is a a/ə or ə/a contrast in retrogressive reduplication words. But that is different from this case since the base in those binoms are assigned with the feature-element [-round].

\(^{41}\) In the thirty-one OC rhymes (see the table in (11) in Chapter One), one third of them are so-called yáng rhymes which end up with a nasal. In view of the fact that some nasal initials exist in the OC phonological system, we can certainly figure out that the total of OC syllables with [+nasal], i.e., syllables with nasal initial or nasal ending, must be more than one-third of the total OC syllables. However, except for some cases involving fixed syllables, all Chinese monosyllabic reduplications present their phonological changes in the rhyme of the first syllable or the initial of the second syllable; thus the syllables with nasal initials should be cut out of the calculation in question since the syllable we are dealing with is the first syllable in a retrogressive reduplication word.
question. Furthermore, since [+round] is more marked than [-round], the change from [+round] to [-round] can be considered to be quite natural. Thus, a relatively regulated pattern arises. This is just the case we find in the examples of (11). This is the reason why the phonological modification on the first syllable is achieved through the distinctive feature [round].

As for the base syllables without the feature-element [+round], I have not completely worked out how the phonological modification on the first syllable occurs. One common characteristic to be roughly generalized, nevertheless, is that the markedness with respect to the correlative segments in both syllables is changed from the marked to the unmarked. Examples are repeated from (39) in Chapter Two, seen in (13) below.

(13)  a. *sây srây (xûshû 脣疏) ‘loaf about’
      b. *kât krât (gêxiá 廣籍) ‘pace up and down’
      c. *mjân mrân (miánmán 糜蠶) ‘in rich and bright colors’

From these four examples, we can see that the liquid -r- in the original form (the second syllable is the same as the original form of the first syllable) is deleted in the surface form of the first syllable.

To sum up, in order to express REPETITION, a verbal monosyllabic syllable is duplicated as two identical syllables. Since what is supposed to be expressed are two meanings (one is the meaning of the base and the other one is the extra sense produced by this process), there is no proper condition which allows OOP to play a part at this point. Thus, a total reduplication pattern seems to be licensed. This is actually not the case since the widely-occurring total reduplication pattern does not allow other kinds of reduplication to share this phonological pattern, i.e., zero modification. Therefore, the two identical syllables in question must be phonologically modified, establishing a new pattern. Economically, it is good enough to change just one syllable for this purpose and the following question is which syllable should be the target. Since the unstressed syllable is more likely reduced in phonetic value and the two syllables in question should be a quasi-iamb (the first syllable is relatively unstressed or weakly-stressed), the first syllable is changed, thereby forming a retrogressive reduplication pattern. On

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42 Accompanied with this [-/+round] alternation, other feature alternations are also involved, but they are in subordinate status.
the other hand, in association with the OC phonological system, it is found that the feature [round] is available in most of the OC syllables; thus for the sake of achieving a relatively-regulated change, the feature [round] is employed. Finally, the shift from the marked to unmarked gives rise to a [-round]/[+round] distinction between the two syllables in a retrogressive reduplication word.

4.4. Formation of fission reduplication

Among all Chinese monosyllabic reduplication patterns, fission reduplication presents the most radical change with respect to phonological shape. As illustrated in Chapter Three, during fission reduplication, the base syllable is fissioned into two pieces composed of its onset and rhyme, producing two syllables by means of inserting a rhyme to go with the original onset and inserting a liquid onset to go with the original rhyme. The following discussion will pursue an understanding of how this pattern is formed.

The investigation in Chapter Three has shown us that it is SPECIALIZATION that motivates a monosyllabic form such as a noun, verb, and measure word to be duplicated. Thus, in the incipient stage of this process, two identical syllables are realized – to take dûlôu *dâq ráq > EMC dôme dœw lœw, ‘skull’ (Zhuangzi) as examples, the duplication of the monosyllabic form tîu *dâq ‘head’ gives rise to two identical syllables tîu tîu *dâq dâq. Two basic considerations reveal that this disyllabic form cannot remain intact. First, if this form remains intact, what eventually surfaces will be a total reduplication word – which would conflict with the widely-existing total reduplication pattern. As demonstrated in the last chapter, total reduplication signals VIVID IMPRESSION, while what is supposed to be signaled here is instead the sense of SPECIALIZATION. Under influence from the VIVID IMPRESSION reduplication, it can be assumed that it is not suitable for SPECIALIZATION reduplication also to take the shape of the total reduplication pattern.

Second, OOP has brought pressure to bear on the form composed of two identical syllables and thus the form has to undergo further phonological modification. The key argument for this lies in the semantic relationship between the base form and what is supposed to be expressed by the reduplication form. In the case of hûdíé 蝴蝶 ‘butterfly’, for instance, the base form xié 拽 means ‘press between; clasp under the arm’ while the correlative reduplication form means
‘butterfly’. It is hard to say that there is a reasonable relationship between these two meanings. Under this condition, people generally are unable to semantically decompose the binom (i.e., the assumed form xiéxié 搂挟) which is supposed to signal “butterfly” into two parts, either of which denotes “press between; clasp under the arm”. Thus, this disyllabic form looks like one undecomposable morpheme to people. Thus the problem arises since a form composed of two syllables denotes one meaning, which is obviously against OOP. So, OOP is triggered to be active in the process of this word formation. OOP requires that the two syllables be modified. These two basic reasons, especially the second one, show that the two identical syllables cannot remain intact; instead, they must be changed in terms of phonological shape. As argued in 4.2 above, the only possible choice for this purpose is to modify these two syllables and to make them sound as much as possible like one syllable. Eventually, in accordance with SSP, a liquid segment replaces the initial of the second syllable. (see the discussion in 4.2 above) Returning to the example dúlōu ‘skull’, we have the form as *dáŋ ráŋ (tóulōu 頭髪) in this stage. In reviewing this form, we find that the two rhymes are identical, unlike what is attested in the surface form (*dáŋ uz) in which the rhyme of the first syllable has become different. So, the question is why is it necessary that the rhyme of the first syllable undergoes a modification even though the initial of the second syllable has already been replaced with a more sonorous liquid for satisfaction of OOP and SSP? The answer can be reached in terms of the whole reduplication system. Let us look at the form *dáŋ ráŋ (tóulōu 頭髪) again. It is not hard to recognize that the manner in which the two syllables are related is exactly the same as that in progressive reduplication forms. Without further modification on this kind of reduplication forms, they will be certainly confused in phonological shape with those forms under progressive reduplication. We know that such a confusion is possibly allowed if the reduplication forms with different semantic implications are complementarily distributed in terms of their syntactic behaviors. However, the problem is that there is no such complementary distribution with respect to the forms from these kinds of reduplication. Therefore, this kind of confusion is not allowed. It is consequently seen that the different semantic implications of reduplication should be denoted by different reduplication patterns. Given this constraint, now that the progressive reduplication
pattern has already been occupied by forms with DIMINUTIVE and VIVIDNESS\textsuperscript{44}, the reduplication forms with SPECIALIZATION will not be expected to fall into this pattern, as well.\textsuperscript{45} Under this condition, the fission reduplication form in the half-way stage gets pressure to undergo further phonological modification, forming a new reduplication pattern.

out that what has been found in OC reduplication has provided very good evidence for it since in this reduplication system different morphological implications correspond to different reduplication patterns. One probably is not quite satisfied with this argument since it seems to be no more than a kind of self-proving. Let us consult a case in living language. Standard Mandarin appears to provide a case in which many different morphological implications are denoted just by one identical reduplication pattern, i.e., total reduplication. This is actually definitely not the case. As shown in Chao (1968) and Zhu Dexi (1982), as well as my own experience, the correspondence between different morphological implications and different reduplication patterns can be clearly recognized with regard to their stress patterns and rules of tone sandhi. Simply speaking, if the monosyllabic form is an adjective, then, the reduplication form is always assigned with a high level tone in the second syllable, usually simultaneously getting retroflexed and followed by a particle de, e.g., xaw\textsubscript{214} xaw\textsubscript{55} (hào hào 好好儿) ‘suitably good’, ta\textsubscript{51} ta\textsubscript{55} to\textsubscript{6} (dà dà de 大大的) ‘slightly big’. In the case of the measure word, the reduplication binom presents a quasi-iamb stress pattern, e.g., kY\textsubscript{51} kY\textsubscript{51} (gé gé 個個) ‘every one’. Unexpectedly, both noun reduplication and verb reduplication apparently fall in one stress pattern, i.e., trochee. However, this identity cannot be maintained regarding their tone sandhi in one case. The case is that if the base form is a monosyllabic noun with the third tone, then the first syllable of the reduplication binom will be assigned low tone; if the base form is a monosyllabic verb with the third tone, then the first syllable of the reduplication binom will be assigned rising tone. For instance, the reduplication of the monosyllabic noun law\textsubscript{214} (the third tone) gives rise to law\textsubscript{21} law\textsubscript{6} (láo-lao 姥姥) ‘(maternal) grand mother’ while the reduplication of the monosyllabic verb tsow\textsubscript{214} (the third tone) gives rise to tsow\textsubscript{55} tsow\textsubscript{6} (zòu-zòu 走走) ‘just walk’. Note that the patterns of tone sandhi in these two reduplication words differ with respect to the first syllables. Thus it can be seen that the apparently-identical reduplication pattern is possibly distinguished on the basis of different morphological implications. It should also be noted that even if there is no such implicit difference between the noun reduplication and verb reduplication, it is still explainable since the reduplication nouns and reduplication verbs are complementarily distributed in terms of their syntactic behaviors. In short, it is really the case that in the reduplication system of the language different morphological implications should correspond to different reduplication patterns. This fact provides a solid basis on which our arguments are logically advanced.

\textsuperscript{44} The forms with these two different semantic implications share the same reduplication pattern because these forms are complementarily distributed.

\textsuperscript{45} One assumption on which this argument is made is that progressive reduplication was established earlier than fission reduplication. At first glance, it seems possible to make the opposite assumption; that is, fission reduplication is earlier than progressive reduplication. However, the data at hand only allows us to hold the assumption we have been holding.
How this further modification is achieved is a question to be answered. As mentioned before, except for the appearance of fixed segmentism\(^{46}\), further phonological modification on the candidate of a disyllabic reduplication form is always realized in the boundary constituents of the two contiguous syllables, i.e., the rhyme of the first syllable and the initial of the second syllable. In line with this constraint, and in view of the fact that the initial of the second syllable has already undergone modification, the only possible choice is the rhyme of the first syllable. This is the reason why the rhyme of the first syllable of fission reduplication words are modified in OC, MC, and modern dialects, though the specifics of modification are not identical in these forms of the language. Let us first develop an account for the modification in MC and modern dialects.

In Chapter Three, I have shown that this kind of modification can be divided into two types; one replaces the rhyme with a fixed constituent composed of the schwa and a glottal stop as in MC and Jin dialects, and the other one cuts off the coda as in Fuzhou Min dialect and Shunping Mandarin. These two types are actually motivated by OOP, SSP, and Minimal Word constraint (e.g., Itô 1990, McCarthy and Prince 1990, Kenstowicz 1994). We have discussed OOP and SSP above. As for Minimal Word constraint, it is based on a phenomenon common in many languages that words of one mora or one syllable are avoided: a minimal bimoraic/disyllabic requirement is imposed. Due to the existence of OOP, Minimal Word phenomenon in Chinese definitely cannot be understood in terms of syllables; instead, it exists in terms of moras. In OC, all syllables are heavy syllables (see discussion in Chapter One), which satisfies the Minimal Word constraint. In MC and modern dialects, the Minimal Word phenomenon is not as prominent as in OC, but it can still be considered existent since the nonlexical class of pronouns and grammatical particles tend to be monomoraic while lexical units are mainly bimoraic.\(^{47}\) Thus

\(^{46}\) The term “fixed segmentism” can be found in Alderete et al. (1999).

\(^{47}\) Duanmu (1990) proposes that all rhymes in Mandarin syllables have two slots (bimoraic). This is a persuasive proposal, which basically matches the facts and is typology supported from the OC case. Nevertheless, it needs to be modified because of opposite examples. In Sun Jingtao (1998), it was found that in the retroflex suffixation of Shunping Mandarin, a root syllable ending up with a high back vowel will give rise to an extra syllable \(w\), e.g., \(t'aw53\) \(\rightarrow\) \(t'aw53\ w\) ‘lasso’/’loop’. However, in the case of the syllable \(t'u51\), it does not give rise to such an extra syllable during the suffixation, though \(t'u51\) also ends up with a high back vowel (\(w\) and \(u\) are the same, but differ just in respect to their syllabicity); thus we have such an example as \(t'u51\) \(\rightarrow\) \(t'w51\) ‘rabbit’. The crucial distinction between \(t'aw51\) and \(t'u51\) is that the former syllable is bimoraic while the latter is monomoraic. The
it seems reasonable to hypothesize that for the lexical units (all fission reduplication words are referred to as lexical units) bimoraic syllables are more typical and preferred; by contrast, monomoraic syllables are atypical and tend to be avoided. Given this, if a monomoraic syllable is present in the first syllable of a fission reduplication forms, then this monomoraic syllable will be treated as an atypical syllable. Since such an atypical syllable lacks independence, it is naturally incorporated into another syllable (the following syllable in a fission reduplication form), thereby forming a more closely-juxtaposed constituent. Recall that the replacement of the initial of the second syllable with a sonorous glide has already produced an effect that would give an impression that the two syllables sound like one and thus the modification on the rhyme of the first syllable (from the bimoraic to the monomoraic) will make further augmentation on this impression. Let us take the fission reduplication word k'əw² ləw⁰ (the base is k'əw² 'mouth')⁴⁹ as an example, seen in (14) below.

(14) a. the first step: two identical syllables k'əw k'əw

```
5   V  
4   G  
3   L  
2   N  
1   O  
```

```
\begin{tikzpicture}[scale=0.5]
  \node (v1) at (0,0) {k';};
  \node (v2) at (1,0) {ə};
  \node (v3) at (2,0) {w};
  \node (v4) at (3,0) {k';};
  \node (v5) at (4,0) {ə};
  \node (v6) at (5,0) {w};
  \node (o1) at (0,1) {\sigma one};
  \node (o2) at (5,1) {\sigma two};
  \draw [dashed] (v1) -- (v2) -- (v3) -- (v4) -- (v5) -- (v6);
\end{tikzpicture}
```

bimoraic/monomoraic distinction is clearly presented through this morphemic process. We cannot say that all Mandarin syllables are bimoraic, but it is reliable to say that most lexical units in mandarin are bimoraic.

⁴⁸ Both syllables without coda and syllables with the schwa followed by a glottal stop are monomoraic syllables in Chinese.

⁴⁹ k'əw² ləw⁰ is preceded by əje₁₁ 鞋 'shoe', forming əje₁₁ k'əw² ləw⁰ to denote 'back area inside of shoe'. See the discussion in (3a) in Chapter Three.

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b. the second step: replacement of the initial with the liquid l- produces an impression that the two syllables look/sound more like one syllable

```
5  V
4  G
3  L
2  N
1  O

/k' e w l e w/

ο one  ο two
```

c. the third step: cutting the coda of the first syllable results in an augmentation on the impression that the two syllables look/sound more like one syllable

```
5  V
4  G
3  L
2  N
1  O

/k' e l e w/

ο one  ο two
```

Thus we can see that when the pressure from the reduplication system compels the rhyme of the first syllable to be modified, the way in which this modification takes place is still determined by OOP. The shift from bimoraic to monomoraic makes the first syllable somewhat dependent, based on the Minimal Word constraint. That is, a monosyllabic syllable is not like a typical syllable, and thus it is naturally incorporated into the neighboring syllable (following syllable in this case), together forming a Minimal Word in terms of two syllables. As a result, this change makes the first syllable look more like a handmaid of the following syllable; then, the two syllables, together as a fission reduplication word, should sound more like one syllable, thereby satisfying OOP in a subtle way.

The modification of the rhyme of the first syllable of a fission reduplication word in OC is different. Since the OC phonological system consistently presents bimoraic heavy syllables, it is

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50 This step has not much significant effect on the sonority curve. It wins because the deletion of the coda of the first syllable makes the two syllables closer, thereby sounding like one syllable. However, for the sake of easy contrast to the preceding two hypotheses, I also provide this sonority illustration here.
impossible to make the first syllable light, as in the case of MC and modern dialects.  
Nevertheless, some modification can not be waived, and thus another way must be found. In Chapter Three, it has been illustrated that this modification goes in a manner such that the rhyme in question is replaced with another rhyme from the same rhyme category; that is, a constraint of minimal change is imposed. This fact tells us that this minimal change can be considered as a reluctant modification. It does not reflect an endeavor to satisfy OOP or SSP; it just reflects a passive perfunctoriness in its obedience to the OC reduplication system.

It has so far been demonstrated how the fission reduplication pattern is formed. In the first place, the two identical syllables are forced to be modified under the effect of OOP and pressure from the reduplication system; the replacement of the initial of the second syllable with l or r, results in the raising of the sonority level, and the two syllables sound like one syllable (one meaning should be expressed by one syllable). Furthermore, the modification on the rhyme of the first syllable is required mainly due to the pressure from the reduplication system. This further modification in both the OC case and other Chinese cases satisfies this requirement, distinguishing it from other reduplication patterns such as the progressive pattern. It should be noted that modification in the case of MC and modern dialects simultaneously reflects the essence of OOP since the two syllables are made closer and thus they should sound more like one syllable.

4.5. Formation of total reduplication

I shall now make an account of the formation of total reduplication. In Chapter Three, we have seen that total reduplication forms denote VIVID IMPRESSION. This impression cannot be defined as a limited meaning or a content/lexical meaning. On the other hand, we can say that what is expressed by total reduplication is not an independent meaning that can be strictly defined. Since the conditions in which OOP is triggered in this case are not met satisfactorily (there is no content meaning involved), OOP does not apply; consequently, OOP has no impact

51 In line with what happens in the case of MC and modern dialects, at first place I made a speculation that the first syllable is actually a light syllable because of the Emergence of the Unmarked (McCarthy and Prince 1994, Alderete et al. 1999), particularly an almost-universal CV syllable (a light syllable) arising in the particular position though all OC syllables are consistently heavy syllables. I eventually gave up this hypothesis due to lack of evidence. See the discussion in Chapter Three.
on its phonological shape. Thus we can say that there is no pressure forcing this disyllabic form to undergo further modification. This is the fundamental reason why this kind of reduplication is able to keep its two syllables intact and identical.\(^2\)

This argument can be likewise applied to the case of modern Chinese. As mentioned in Chapter Three above, Mandarin has many total reduplication forms which denote VIVID IMPRESSION.\(^3\) These forms usually cannot stand alone; instead, they are frequently preceded by an adjective, such as hóng xīxī 紅兮兮 ‘reddish’ and shē lūlū 摔漉漉 ‘moist’.\(^4\) As far as their phonological property is concerned, both syllables are usually realized as two high level tone syllables. Crucially, these two syllables do not differ with respect to their assignment of stress, both being stressed. Thus it can be seen that since what is expressed by these forms is not a meaning (or it is smaller and lower than a meaning), instead simply a kind of impression, then OOP has no impact in the process of their formation, exactly the same as that in OC.

\(^2\) The total reduplication forms are definitely not trochaic with respect to their stress pattern since the second syllable of such a form can serve as rhymes in poems such as those in Shijing. There is no evidence showing that they are iambic. They are possibly falling into the quasi-iambic category since this is a default stress pattern in Chinese (see the discussion above and Chao 1976).

\(^3\) There are apparently many other kinds of total reduplication words in Mandarin, which are applied to nouns, verbs, and adjectives. However, as pointed out above, all these forms either present trochaic stress patterns and quasi-iambic stress patterns or get one of the two syllables modified (retroflexion). Given this fact, strictly speaking, these forms should not be treated as total reduplication forms; thus it can be hypothesized that since Mandarin speakers consider these forms to express one meaning, OOP has put pressure on these forms, thereby resulting in some kind of modification in terms of suprasegments.

\(^4\) That a total reduplication form is preceded by an adjective is common in such ancient texts as Chuci, for example, fāng fēifei 芳菲菲 ‘sweet smelling’ and lǎo rǎnrǎn 老冉冉 ‘old and feeble’.
CHAPTER FIVE

Concluding Remarks

OC reduplication has long been recognized in linguistic literature, but it had not been comprehensively documented and thus there was no way for us to get a clear picture of the internal process of OC reduplication. This study endeavored to fill this linguistic gap. In Chapter Two and Chapter Three, a wide-ranging investigation into firsthand materials collected from historically-transmitted texts as well as some unearthed inscripitional material has been made. As a result, this investigation has revealed many facts which show that a reduplication system is productively operating in OC. Generally speaking, this system is composed of four basic reduplication patterns which are summarized as in (1) below.

(1) OC reduplication (monosyllable → disyllable) system

<table>
<thead>
<tr>
<th>patterns</th>
<th>characteristics of phonological shape</th>
<th>morphological implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. progressive</td>
<td>both base and reduplicant syllables share a rhyme and the initial of the second syllable is always a</td>
<td>1) SMALLNESS /<em>DIMINUTIVE</em>/</td>
</tr>
<tr>
<td>reduplication</td>
<td>liquid</td>
<td>2) VIVIDNESS</td>
</tr>
<tr>
<td>b. retrogressive</td>
<td>both base and reduplicant syllables share initial, but differ with respect to the [-round]/[+round]</td>
<td>REPETITION</td>
</tr>
<tr>
<td>reduplication</td>
<td>contrast or other kinds of unmarked/marked contrasts in their rhymes</td>
<td></td>
</tr>
<tr>
<td>c. fission</td>
<td>the initial of the base syllable is preserved in the first syllable, followed by a derived rhyme similar</td>
<td>SPECIALIZATION /<em>EXTENSION</em>/ in</td>
</tr>
<tr>
<td>reduplication</td>
<td>to the original; the rhyme of the base syllable is preserved in the second syllable, preceded by a</td>
<td>meaning</td>
</tr>
<tr>
<td>d. total</td>
<td>the base syllable is duplicated as two identical syllables</td>
<td>VIVID IMPRESSION</td>
</tr>
<tr>
<td>reduplication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The establishment of these four patterns shown in this summary is due mainly to the fact that each one has many reliable examples. Moreover, these patterns all have their reflexes in modern
dialects. Thus there is no doubt about the facts behind our description and the classification of these four patterns, though there seem to be some exceptions, which have been pointed out or even tentatively explained upon discussion in each case. I feel reasonably sure that this summary reflects a good understanding of OC reduplication, and then thus, the documentation of reduplication in an ancient form of a language has been added to the literature on this subject.

This study, of course, is not only an endeavor stressing pure description of the reduplication phenomenon, it is also an attempt to address theoretical issues in a formal way. Since I think this study has achieved many new discoveries with respect to reduplication, it is predictable that we can draw references or conclusions from them to support or amend the prevailing theories or treatments on reduplication. First, reduplication is a phenomenon involving both morphological and phonological components; thus, in order to get a good understanding of this process, even in a study emphasizing one component, it is still necessary to draw reference from the other since otherwise many phenomena in this process cannot be explained. One case to be employed to illustrate this point is the modification/non-modification contrast in the OC reduplication system. By the criteria of phonological properties, OC reduplications are initially divided into modified reduplication (progressive, retrogressive, and fission reduplication) and non-modified reduplication (total reduplication). What is the decisive factor responsible for such a distinction? The factor lies behind their different morphological implications; the former kind of reduplication signals content/lexical meaning whereas the latter signals a kind of impression (rather than a content meaning) which cannot be strictly defined. It is due to just this kind of morphological distinction that a phonological distinction results. For modified reduplication, we have learned that the types of modification are characterized by diversity, e.g., replacement with a liquid, [-round]/[+round] (unmarked/marked) contrast, and the minimal change. However, these phonological changes are actually not pure phonological phenomenon; instead, they are all related to semantic implications. That is, the phonological changes are very much concerned with what kind of meaning is supposed to be expressed in the reduplication forms and what kind of semantic relationship exists between the base and component parts. Without recourse to morphological implications of this sort, it is hard to capture the nature of phonological alternations in reduplication. Obviously, what I have now summarized is just based on language-specific properties. However, it is believable that it is of universal significance and that it reflects universal grammar, to some extent. From the innumerable works on the reduplication patterns of many languages, it is found that reduplication patterns are usually distinguished in accordance
with word classes. This fact explicitly indicates that grammatical/semantic processes are very much involved – they not only serve as motivation for launching reduplication, but also play a part in forming the phonological shape of the reduplicant.\footnote{What is meant by saying so is that the semantic relationship between the whole reduplicative form and the component parts usually at least partially determines the phonological modification during reduplication. Sound symbolism and onomatopoeia are also involved in forming the phonological shape in reduplication, but they are not referred to here.} What has been found in OC reduplication is also in accordance with this.

Second, it is universal that reduplication operates on the interface between morphology and phonology, but how this operation progresses or how morphology and phonology interact with one another during the process is to a great extent language-specific. OC reduplication represents an example of this point. Just as in any other language, in OC reduplication it is morphological significance that motivates this process. The following stages, however, reflect some characteristics, which are specific to OC reduplication. As illustrated above, what is duplicated is always a heavy syllable (with two moras). This is determined by an intrinsic characteristic of OC, i.e., that it is a monosyllabic language; the OC root is always denoted by just one heavy syllable. Since content/lexical morphemic meaning in Chinese consistently employs one heavy syllable as its bearer, it is understandable why Chinese reduplication always starts with one syllable.\footnote{In the later forms of Chinese, reduplication based on the disyllabic form is recognized, as well. But reduplication on the basis of monosyllables is more basic on one hand; on the other hand, some reduplication cases with disyllables are actually based on monosyllables (e.g., Zhu Dexi 1982b).} In progressive reduplication and fission reduplication, a common modification is that the initial of the second syllable is replaced with a liquid. This is determined by both OOP and SSP – OOP is a morphological-phonological principle as well as a language-specific principle, whereas SSP is a phonological principle as well as a universal principle. Fission reduplication simultaneously presents another kind of modification with respect to the rhyme of the first syllable; in OC it is realized as Minimal Change while in MC and modern dialects the change can be basically characterized as a reduction of two moras to one mora.\footnote{In the later forms of Chinese, reduplication based on the disyllabic form is recognized, as well. But reduplication on the basis of monosyllables is more basic on one hand; on the other hand, some reduplication cases with disyllables are actually based on monosyllables (e.g., Zhu Dexi 1982b).} The purpose of this modification is to distinguish itself from other reduplication patterns, but the way this modification is realized depends on the phonological properties of the specific language. In modern dialects, the reduction of two moras to one mora is realized since light syllables (one mora) are allowed in those language forms, while this kind of mora reduction does not occur in
OC since light syllables generally are not available in the OC syllable inventory. As for OC retrogressive reduplication, in the case of the base with the feature-element [+round], the feature-element [-round] is realized in the rhyme of reduplicant. Though this [-round]/[+round] contrast is rooted in the OC rhyme system, why the feature [round] is active for this purpose is explainable in terms of the universal characteristics of distinctive features. Thus, we can see how both universal and language-specific properties with respect to morphology and phonology interact during reduplication.

Third, the example of OC reduplication enables the evaluation of different theoretical models of reduplication in general. In recent years generative grammar has been an active field and much generative literature has contributed to advance theories to account for reduplication. Let us check some of these reduplication theories against the case of OC reduplication. Five models are briefly introduced below.

Model One (Marantz 1982). Reduplication consists of two separate aspects: (i) copy the phonemes of the base, but (ii) the number actually pronounced and their prosodic organization are predetermined independently of the particular base. In particular, partial reduplication is treated as mapping a copy of the base’s segmental tier to a predesignated sequence of CV skeletal slots.

Model Two (e.g., Marantz 1982, Yip 1982). Many reduplication cases show a phenomenon in which a portion of the reduplicant has a fixed melodic shape regardless of the base melody. According to this model, this phenomenon is treated by prespecifying the segmental template with relevant segments or features, which then pre-empt the association of phonemes copied from the base to the relevant position in the template.

3 In some Fuzhou cases the reduction still gives rise to two moras. See the discussion in Chapter Three.
4 In Sun Jingtao (1998b), I argue that in many languages such features as [nasal], [ATR], and [round], called morphemic features, possibly present plus/minus alternation to form the expression of new morphemic implications since these kinds of features within an articulation setting can be easily interchanged by presenting a plus or minus value. Thus, we can see that there are some universal properties running through all these features. Likewise, it can be assumed that the feature [round], active in some kinds of OC reduplications is also determined by these universal properties. Apart from this explanation based on binary feature theory, this [-round]/[+round] contrast can also be alternatively accounted for in terms of markedness. In line with this theoretical model, only plus value is marked and is phonologically active. Thus, the feature-element [+round] in the base syllable is just a marked feature, while its absence in the correlative reduplicant can be considered to be a derive from “the emergence of the unmarked” (McCarthy and Prince 1994).
Model Three (McCarthy and Prince 1986, 1988, 1990). Reduplication is not syllable copying but mapping the base's segmental tier (its melody) to a phonemically empty affix. However, the affix is not an arbitrary sequence of skeletal slots, but rather is drawn from a restricted class of prosodic categories that includes mora, syllable, and metrical foot.

Model Four (Shaw 1987). During the mapping procedure of reduplication, mere identification of skeletal units or prosodic category nodes is inadequate since there is a case where non-adjacent segments in the original phonological string must be somehow selectively identified and copied. By taking advantage of a notion of phonological head, defined branching relations, and combining them with criteria of precedence, peripherality, markedness theory, and hierarchical dominance relations, cases of apparent melodic skipping reduce to cases where only the head structure of an adjacent constituent maps onto the template.

Model Five (Steriade 1988). Partial reduplication is treated as reduction from full reduplication. The entire base morpheme is first copied, including all of its prosodic structure: [base] \(\rightarrow\) [base+base]. The reduplicant then must be reduced in the appropriate way. In this view, the construction of the reduplicated affix is no longer treated as mapping to a preexistent template. Rather, the prosodic affix crystallizes as the left or right edge of the reduplicant through an appropriate modification.

Since mapping a copy of the base's segmental tier to a predesignated sequence of CV skeletal slots is not the principal operation during OC reduplication, Model One does not seem to be an adequate framework. Model Two appears to be helpful in dealing with such fixed melodic materials as liquids in the initial position of the second syllable in OC reduplication. However, such an ad hoc stipulation blocking individual melodic material from copying gives no insight into why it should be so. Both Model Three and Model Four present relatively effective approaches to amending the problems encountered in the treatment of reduplication as copying and mapping the arbitrary sequence of skeletal slots. Though this study does not exactly follow these two models, some essences implied in them have brought to light the understanding of OC reduplication. In OC reduplication, the prosodic affix (reduplicant) is consistently a heavy syllable and any operation within the phonological component can only be completed in this domain. Thus, the prosodic approach is applicable in this case. It is also found that in some cases the phonological modification of OC reduplication is determined on the basis of the syllable structure. For instance, in the case of retrogressive reduplication with [-round] involved in the
base syllable, the second element of a consonant cluster is deleted in the reduplicant syllable. Such a deletion is possibly accounted for with recourse to an approach using head structure.

As mentioned in Chapter One, with respect to OC reduplication as well as reduplication in other Chinese forms, the general view held in this study is basically identical to Model Five. The reason for this choice is simply that the facts found in OC reduplication are satisfied with this model. We have described above many cases of OC reduplication, in which the base and reduplicant are always the same regarding their prosodic shape (one syllable), but they possibly differ with respect to their sub-constituents. Crucially, all these modifications over sub-constituents can only be explained on the basis of the assumption that the modification starts with two identical syllables. The approach of copying and mapping individual segments or features otherwise will make the accounting for such a complicated process more complicated. For instance, in the case of fission reduplication, both the onset and rhyme of the original syllable are preserved in the peripheral positions of the new disyllabic reduplication form and simultaneously some new melodic materials are produced in adjacent positions of the new disyllabic reduplication form. There is even no integrated base syllable on the surface level, thus rendering it impossible to recognize where the reduplicant syllable is located. Without assuming that two identical syllables (total reduplication) occur at the very beginning of the process, there does not seem to be a regulated way in which phonological modifications could proceed.

The approach generally adopted in this study is not a model just for an ad hoc treatment of some particular cases. Rather, this approach is of theoretical significance. Reduplication, as the term suggests, refers to a process of reduplicating a base form to signal a new meaning or impression. It is obvious that the fundamental operation in this process is in all events to get a duplicate. As for the phonological modification which is eventually realized in the surface reduplicative form, it can be explained by means of taking the interaction between morphology and phonology into account. With such an understanding, we can see that Model Five is successful in capturing the essence of reduplication. There is every reason to claim that with all kinds of reduplication the base is faithfully duplicated first and then the tentative form “base+base” undergoes appropriate modifications that are controlled by a set of constraints.

As such, it can be seen that this overall opinion on reduplication is in nature not greatly different from that of Correspondence Theory (McCarthy and Prince 1995b). Correspondence

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5 In the case of total reduplication there is of course no such a difference.
Theory is set within Optimality Theory (OT) and the argument for it will call crucially on three fundamental ideas of OT: parallelism of constraint satisfaction, ranking of constraints, and faithfulness between derivationally-related representations. The full theory of reduplication involves correspondence between stem and base, between base and reduplicant, and between stem and reduplicant. In the case of OC reduplication, it can be seen that this theoretical model is very advantageous since the detailed relationships involved in reduplication are the fundamental issues that cannot be evaded in any analysis of reduplication. Furthermore, since this model presents a general mechanism, a number of diversified reduplication cases are explicitly dealt with in a formal way; thus the universal nature and language-specific characteristics of reduplication should be more easily revealed and distinguished. At this point, however, it should be noted why the Correspondence Theory is not applied to this study. There are two basic considerations. First, Correspondence Theory within Optimality Theory is a theoretical model with a high level of formalization. In the application of this framework to a phonological process, no significant detail can be neglected; that is, ambiguous treatment even with respect to the subtleties is not allowed, otherwise the whole application process would be blocked. However, in view of the nature of the data in this present study, it is very hard for this study to come with the property of precision implied in this OT model. Second, as has been stressed repeatedly, reduplication is not a pure phonological phenomenon; it is instead a phenomenon involving both morphology and phonology. Correspondence Theory, however, seems successful especially in the phonological component. How the morphological component is involved under this model is still at issue. In any event, this theory deserves serious consideration in the analysis of OC reduplication; but an attempt at using this theory will have to be left for another occasion.

In addition to reduplication, this study has also touched other linguistic issues. I shall demonstrate two of them below.

i. OC reconstruction. In Chapter One, it is clearly stated that this study will be to a great extent dependent on a good understanding of OC phonology. Interestingly, this study is quite helpful in the understanding of OC phonology; that is, the inferences drawn from OC reduplication serve as a good guide in reconstructing the OC phonological system. Let us review one important example. To achieve a good reconstruction for OC phonology, one important

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6 For Optimality Theory (OT), see Prince and Smolensky (1993), McCarthy and Prince (1994, 1995b), among others.
method is to make sure of a faithful tracing of important properties in the later form of the language, i.e., MC, back to OC; in other words, significant properties in MC should be able to give a satisfying explanation as to their origin in OC phonology. This is a crucial criterion by which an OC reconstruction is judged acceptable or not. In MC phonology, one widely-discerned property is the contrast between Type A syllables and Type B syllables. How to explain this distinction is a basic issue. Karlgren correlated the distinction with a theory about the structure of the rhyme tables and, on the assumption that Grade III meant palatalization of the initial induced by a medial yod -j-, reconstructed this throughout all so-called ‘Grade III rhymes’, i.e., those that fell wholly or partly into Grade III. He then projected this feature back into OC. There are serious objection to this. As was pointed out by Pulleyblank (1962), the yod reconstructed by Karlgren does not make sense in terms of the transcriptions of foreign words in Chinese from Han through to Tang and dose not correspond in any consistent way with such a phoneme in Tibeto-Burman cognates. It has since been shown that it was based on a wrong interpretation of the structure of the Grades in the rhyme tables (Pulleyblank 1970-71, 1984, 1995b).

From the point of view of the present study, the most important issue is the nature of the distinction in OC. The reconstruction of Li Fang-kuei (1971) and William Baxter (1992) retain Karlgren's yod. Pulleyblank's first proposal (1962) was to reconstruct long vowels in Type B, assuming that they had later developed a palatal glide. He later postulated a prosodic contrast between accent on the second mora in Type A and accent on the first mora in Type B (1973, 1994a). This is followed in the reconstructions in this study. Another proposal is that Sergei Starostin (1989), who reconstructs long vowels in Type A and short vowels in Type B and this has reportedly now been adopted by Baxter also.

The relevance of the present study to this question is the observation that in the great majority of cases reduplicated forms preserve the A/B contrast in the reduplicant as well as the base: either AA or BB, not AB or BA. It seems to be easier to account for this if the distinction

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7 Qieyun rhymes generally speaking are confined to one or other of the two syllable types. Type A rhymes are those placed exclusively in Grades I, II, or IV in the rhyme tables. With exception, Type B rhymes are at least partly in Grade III but may also overlap with Grade II and IV. The exception is rhyme yǒu 音 which is a Type B rhyme placed in Grade IV in complementary distribution to yǒu 尤 in Grade III. Rhymes dōng 東, mā 麻, and gēng 庚 combine finals of Type A and Type B. There are also restrictions on the initials that can occur with the two types. EMC initials t, tʰ, d, n, y, are found only in Type A. Initials tɕ, tɕʰ, dz, c, z, j, g, z, are found only in Type B.

8 For the sake of convenient reference, three pairs of examples are shown below:
was prosodic than if it involved a segmental feature of some kind, whether the presence or absence of yod or the length or shortness of the vowel. It should be noted that segmental features are often changed in the reduplicant.

ii. *The establishment of OOP*. A language-specific principle further developed and clearly stated in this study is referred to as OOP (see Chapter Four above). OOP was first realized in Chao (1968, 1976), developed and postulated in Xu Tongqiang (1991, 1992) and Wang Hongjun (1994, 1999). This principle is tenable, but, to these authors, it was somewhat problematic since quite a few examples could not be explained from their point of view. These examples were so-called liánmiánzi (see Chapter One). Since liánmiánzi forms appear to have two syllables with one meaning, they are apparently against OOP. One may treat these liánmiánzi as exceptions to OOP, but then the problem arises that exceptions are too frequent. The study of OC reduplication, however, has revealed that many so-called liánmiánzi forms actually result from the reduplication of monosyllables. Thus, their existence can not refute the tenability of OOP. Given this, it can be seen that OC reduplication presents evidence for the reality of OOP.

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a. progressive reduplication:

i. mènglàng 孟浪 *mrâŋ sâŋ > EMC mœjŋh laŋh (Type A syllables)
   Karlgrén’s reconstruction: *mõng lâng (a=a, a=a:)

ii. xiâoyâo 悠遙 *sâw láw > EMC siaw jiaw (Type B syllables)
   Karlgrén’s reconstruction: *sjoq djog (i=j)

b. retrogressive reduplication:

i. Qingkông 青工 *k̚arj’s k̚arj’s > EMC k̚ejŋh k̚o̚wŋh (Type A syllables)
   Karlgrén’s reconstruction: *kieng k’ungh

ii. zhânzhuăn 轉轉 *tránʔ trwánʔ > EMC trian’ trwian’ (Type B syllables)
   Karlgrén’s reconstruction: *tiân tiwan (i=j)

c. fission reduplication:

i. tîdié 識識 *laj lék > EMC dej det (Type A syllables)
   Karlgrén’s reconstruction: *d’ier d’iet

ii. jìli 疾藥 *dz̚ek râj > EMC dzit li (Type B syllables)
   Karlgrén’s reconstruction: *dz̚jet li’er (i=j)
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ABBREVIATION (used in the main body and/or this bibliography)

AM-Asia Major
BIHP-Bulletin of the Institute of History and Philology (= Lishi yuyan yanjiusuo jikan 歷史語言
研究所集刊 [Taipei: Academia Sinica])
FY-Fangyan 方言
HJAS-Harvard Journal of Asiatic Studies
HYDZD-Hanyu da zidian 漢語大字典. Chengdu: Sichuan cishu chubanshe, Wuhan: Hubei cishu
JALL-Journal of African Languages and Linguistics
JAOS-Journal of the American Oriental Society
JCL-Journal of Chinese Linguistics
JEAL-Journal of East Asia Linguistics
LI-Linguistic Inquiry
MS-Monumenta Serica
PY-Phonology Yearbook
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shuju 中華書局, 1980.
Shuowen-Shuowen jiezi 說文解字.
THTP-The Handbook of Phonological Theory (ed. by John Goldsmith), Oxford, UK: Blackwell
YYXLC-Yuyanxue luncong 語言學論叢
ZGYW-Zhongguo Yuwen 中國語文

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